



RICHARDSON SMITH GARDNER & ASSOCIATES
Engineering and Geological Services

TRANSMITTAL FORM

If enclosures are not as noted or
if you require additional information,
please notify us immediately

August 7, 2008

Mr. Brian Wooten
NCDENR - SWS
1646 Mail Service Center
Raleigh, NC 27699-1646

SUBJECT: Davidson County Well Abandonment/Installation Records
Davidson County Landfill

RSG PROJECT NO: Davdco-07-1

We are sending you the following items:



By: US Mail ☒ [X]
Overnight Mail ☐ []
Hand ☐ []
Other ☐ []

COPIES	ITEM	DESCRIPTION
1	Letter	Well abandonment/installation memo

These are transmitted as checked below:

- | | |
|--|--|
| <input type="checkbox"/> For Information | <input type="checkbox"/> Approved as Noted |
| <input type="checkbox"/> As Requested | <input type="checkbox"/> Approved as Noted-Revise and Resubmit |
| <input type="checkbox"/> For Review and Comments | <input type="checkbox"/> Not Approved-Revise and Resubmit |
| <input type="checkbox"/> For Revision | <input checked="" type="checkbox"/> For Record and File |
| <input type="checkbox"/> For Approval | <input type="checkbox"/> Submittal |
| <input type="checkbox"/> Approved | <input type="checkbox"/> For Recording |

REMARKS:

Brian -

Attached please find the well abandonment and installation records for the Davidson County Phase 2 landfill. John Murray requested that I send this information along to you in his letter regarding the Phase 2 permit to operate. Please call me if you have any questions.

Thanks,

Joan A. Smyth, P.G.
Senior Hydrogeologist



**MEMORANDUM**

TO: Pieter Scheer, P.E. - RSG

FROM: Joan A. Smyth, P.G. - RSG

DATE: June 13, 2008

RE: Davidson County Phase 2 Area 1
Cell Subgrade Certification, Well Abandonment
and Well Installation Certification



During the course of construction of the Davidson County Phase 2 Area 1 Cell, I have conducted multiple inspections of the site. My inspections indicated that the soils at grade elevations were generally consistent with those encountered during site drilling (varying combinations of silts clays and sands).

During my visit of December 17th 2007, two large boulders were noted within the cell. One boulder was located east of the center of the cell. This boulder was completely excavated and removed. The second boulder was located within the southern berm. This location, it was later determined, was below proposed subgrade. Once sugrade was achieved, this boulder was suitably below grade.

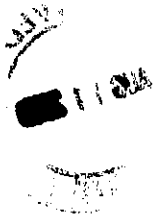
Prior to construction, all piezometers that were previously installed within the cell for site permitting were abandoned in accordance with 15A NCAC.2C.0113. Well abandonment records are attached. The well locations are shown on **Figure 1**. In addition, one hand dug well located in this area was also abandoned. This well was approximately 36-inches in diameter and extended to a depth of 43 feet below grade. No water was encountered in this well prior to abandonment. A photo of this well after abandonment is attached. The hand-dug well was abandoned on July 10th 2007 while the remaining piezometers were abandoned between June 1 - 6th 2007 and August 29th 2007.

Ground water monitoring wells for the Area 1 cell (MW-1, MW-3s, MW-3d, MW-4s, MW-4d, MW-5, MW-6s, MW-6d, MW-7 and MW-8) were installed in accordance with 15A NCAC 2C.0108. Boring logs for these wells are attached. At this time, proposed monitoring wells MW-2 and MW-9 have not been installed due to access conditions that are being addressed. These wells will be installed prior to landfill operation.

Based upon my observations of the subgrade, well abandonment, and well installation, I hereby certify that the subgrade material was consistent with what was found during the site investigation, the piezometers were abandoned in accordance with 15A NCAC 2C.0113 and the monitoring wells were installed in accordance with 15A NCAC 2C.0108


Joan A. Smyth, P.G.





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Well Abandonment Records

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WELL ABANDONMENT RECORD

North Carolina Department of Environment and Natural Resources- Division of Water Quality

WELL CONTRACTOR CERTIFICATION #

2089

1. WELL CONTRACTOR:

DAVID BARRON

Well Contractor (Individual) Name

ENG. Tectonics

Well Contractor Company Name

STREET ADDRESS 1720 JARGRAVE ST.

W-Salem N.C. 27107

City or Town State

Zip Code

(336) 724-6994

Area code - Phone number

2. WELL INFORMATION:

SITE WELL ID # (if applicable)

P2#5

STATE WELL PERMIT # (if applicable)

COUNTY WELL PERMIT # (if applicable)

DWQ or OTHER PERMIT # (if applicable)

WELL USE (Circle applicable use): Monitoring Residential

Municipal/Public Industrial/Commercial Agricultural

Recovery Injection Irrigation

Other (list use) Water Levels

3. WELL LOCATION:

COUNTY Davidson QUADRANGLE NAME

NEAREST TOWN: ~~Thomasville~~ Thomasville

1242 old Hwy 29 27360 N.C.

(Street/Road Name, Number, Community, Subdivision, Lot No., Parcel, Zip Code)

TOPOGRAPHIC / LAND SETTING:

Slope Valley Flat Ridge Other

(Circle appropriate setting)

LATITUDE 35 50.887N

LONGITUDE 80 11.183W

May be in degrees, minutes, seconds, or in a decimal format

Latitude/longitude source: GPS Topographic map

(Location of well must be shown on a USGS topo map and attached to this form if not using GPS.)

4a. FACILITY- The name of the business where the well is located. Complete 4a and 4b. (If a residential well, skip 4a; complete 4b, well owner information only.)

FACILITY ID # (if applicable)

NAME OF FACILITY Davidson Co. Landfill

STREET ADDRESS 1242 old Hwy 29

Thomasville N.C. 27360

City or Town

State

Zip Code

4b. CONTACT PERSON/WELL OWNER:

NAME CHARLIE BRUSHWOOD

STREET ADDRESS 1242 old Hwy 29

Thomasville N.C. 27360

City or Town

State

Zip Code

(336) 242-2284

Area code - Phone number

5. WELL DETAILS:

a. Total Depth: 45.0' ft. Diameter: 2" in.

b. Water Level (Below Measuring Point): 34.55 ft.

Measuring point is 1.70 ft. above land surface.

6. CASING: Length Diameter

a. Casing Depth (if known): 45' ft. 2" in.

b. Casing Removed: 45' ft. 2" in.

7. DISINFECTION: NA

(Amount of 65%-75% calcium hypochlorite used)

8. SEALING MATERIAL:

Neat Cement

Sand Cement

Cement _____ lb.

Cement _____ lb.

Water _____ gal.

Water _____ gal.

Bentonite

Bentonite _____ lb.

Type: Slurry _____ Pellets _____

Water _____ gal.

Other

Type material EASY GROUT

Amount 150 lbs 75 gals water

9. EXPLAIN METHOD OF EMPLACEMENT OF MATERIAL:

OVER REAM WELL + Tremie GROUT
FROM BOTTOM TO TOP

ALL well materials removed

10. WELL DIAGRAM: Draw a detailed sketch of the well on the back of this form showing total depth, depth and diameter of screens (if any) remaining in the well, gravel interval, intervals of casing perforations, and depths and types of fill materials used.

11. DATE WELL ABANDONED

6-6-07

I DO HEREBY CERTIFY THAT THIS WELL WAS ABANDONED IN ACCORDANCE WITH 15A NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

David Barron

6-6-07

SIGNATURE OF CERTIFIED WELL CONTRACTOR

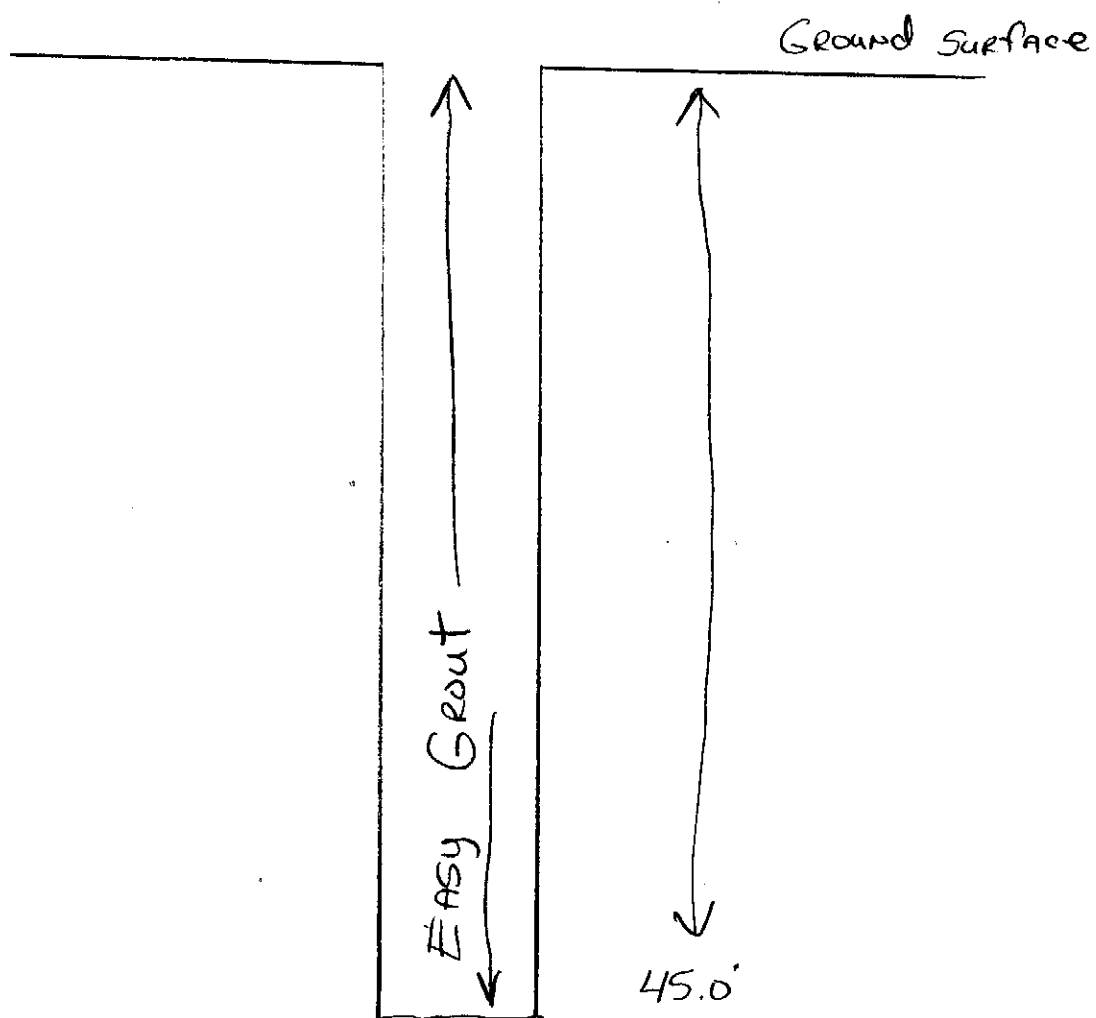
DATE

SIGNATURE OF PRIVATE WELL OWNER ABANDONING THE WELL DATE

(The private well owner must be an individual who personally abandons his/her residential well in accordance with 15A NCAC 2C .0113.)

David Barron

PRINTED NAME OF PERSON ABANDONING THE WELL





WELL ABANDONMENT RECORD

North Carolina Department of Environment and Natural Resources- Division of Water Quality

WELL CONTRACTOR CERTIFICATION #

2089

1. WELL CONTRACTOR:

DAVID BARRON

Well Contractor (Individual) Name

ENG. TECTONICS

Well Contractor Company Name

STREET ADDRESS 1720 VARGRAVE ST.

W-Salem N.C. 27107

City or Town

State

Zip Code

336 724-6994

Area code - Phone number

2. WELL INFORMATION:

SITE WELL ID # (if applicable)

MW# 50

STATE WELL PERMIT # (if applicable)

COUNTY WELL PERMIT # (if applicable)

DWQ or OTHER PERMIT # (if applicable)

WELL USE (Circle applicable use): Monitoring Residential
Municipal/Public Industrial/Commercial Agricultural
Recovery Injection Irrigation
Other (list use) WATER LEVELS

3. WELL LOCATION:

COUNTY DAVIDSON QUADRANGLE NAME

NEAREST TOWN: ~~Thomasville~~ Thomasville
1242 old Hwy 29 27360 N.C.

(Street/Road Name, Number, Community, Subdivision, Lot No., Parcel, Zip Code)

TOPOGRAPHIC / LAND SETTING:

Slope Valley ☒ Flat Ridge Other

(Circle appropriate setting)

LATITUDE 35 50.887N

LONGITUDE 80 11 183W

May be in degrees,
minutes, seconds, or in a
decimal format

Latitude/longitude source: ☒ GPS Topographic map
(Location of well must be shown on a USGS topo map and
attached to this form if not using GPS.)

4a. FACILITY- The name of the business where the well is located. Complete 4a and 4b.
(If a residential well, skip 4a; complete 4b, well owner information only.)

FACILITY ID # (if applicable)

NAME OF FACILITY DAVIDSON CO. LANDFILL

STREET ADDRESS 1242 old Hwy 29

Thomasville N.C. 27360

City or Town

State

Zip Code

4b. CONTACT PERSON/WELL OWNER:

NAME CHARLIE BRUSHWOOD

STREET ADDRESS 1242 old Hwy 29

Thomasville N.C. 27360

City or Town

State

Zip Code

336 242-2284

Area code - Phone number

5. WELL DETAILS:

a. Total Depth: 75.0' ft. Diameter: 2" in.

b. Water Level (Below Measuring Point): 27.30 ft.

Measuring point is 2.29 ft. above land surface.

6. CASING: Length Diameter

a. Casing Depth (if known): 75' ft. 2" in.

b. Casing Removed: 0 ft. 2" in.

7. DISINFECTION: NA

(Amount of 65%-75% calcium hypochlorite used)

8. SEALING MATERIAL:

Neat Cement

Sand Cement

Cement _____ lb.

Cement _____ lb.

Water _____ gal.

Water _____ gal.

Bentonite

Bentonite _____ lb.

Type: Slurry _____ Pellets _____

Water _____ gal.

Other

Type material EASY GROUT

Amount 50 lbs 25 gals water

9. EXPLAIN METHOD OF EMPLACEMENT OF MATERIAL:

Tremie Grout From Bottom
of Well To Top

10. WELL DIAGRAM: Draw a detailed sketch of the well on the back of this
form showing total depth, depth and diameter of screens (if any) remaining
in the well, gravel interval, intervals of casing perforations, and depths and
types of fill materials used.

11. DATE WELL ABANDONED

6-6-07

I DO HEREBY CERTIFY THAT THIS WELL WAS ABANDONED IN ACCORDANCE
WITH 15A NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF
THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

David Barron

6-6-07

SIGNATURE OF CERTIFIED WELL CONTRACTOR

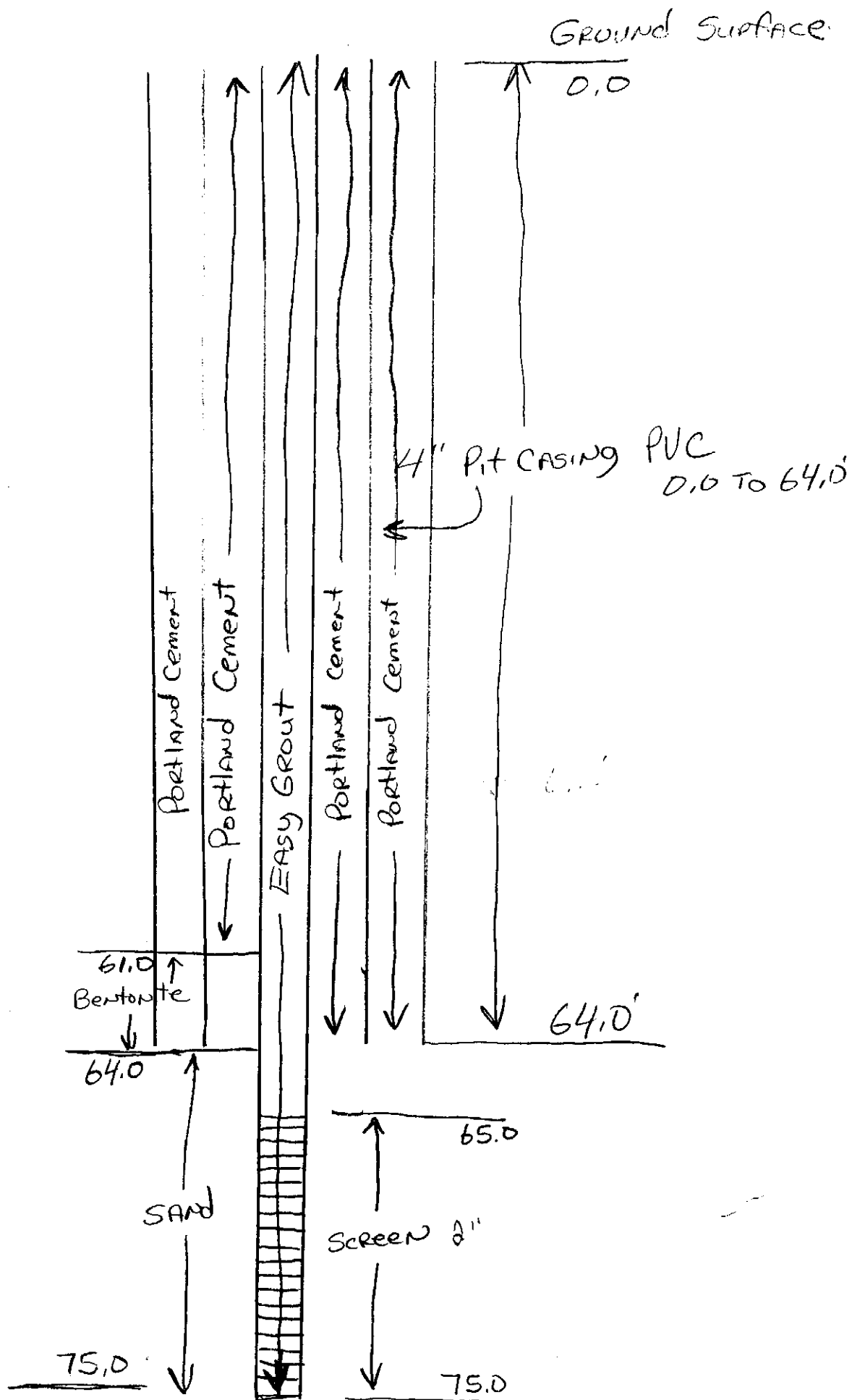
DATE

SIGNATURE OF PRIVATE WELL OWNER ABANDONING THE WELL DATE

(The private well owner must be an individual who personally abandons his/her residential well
in accordance with 15A NCAC 2C.0113.)

DAVID BARRON

PRINTED NAME OF PERSON ABANDONING THE WELL





WELL ABANDONMENT RECORD

North Carolina Department of Environment and Natural Resources- Division of Water Quality

WELL CONTRACTOR CERTIFICATION #

2089

1. WELL CONTRACTOR:

DAVID BARRON

Well Contractor (Individual) Name

ENG. TECTONICS

Well Contractor Company Name

STREET ADDRESS 1720 UARGRAVE ST.

W-Salem N.C. 27107

City or Town State

Zip Code

(336) - 724-6994

Area code - Phone number

2. WELL INFORMATION:

SITE WELL ID # (if applicable) P2-6

STATE WELL PERMIT # (if applicable) _____

COUNTY WELL PERMIT # (if applicable) _____

DWQ or OTHER PERMIT # (if applicable) _____

WELL USE (Circle applicable use): Monitoring Residential

Municipal/Public Industrial/Commercial Agricultural

Recovery Injection Irrigation

Other (list use) _____

3. WELL LOCATION:

COUNTY DAVIDSON QUADRANGLE NAME _____

NEAREST TOWN: Thomasville N.C.

1242 old Hwy 29 27360-0024

(Street/Road Name, Number, Community, Subdivision, Lot No., Parcel, Zip Code)

TOPOGRAPHIC / LAND SETTING:

Slope Valley Flat Ridge Other _____

(Circle appropriate setting)

LATITUDE 35° 50.51 N

LONGITUDE 80° 10.58 W

May be in degrees,
minutes, seconds, or in a
decimal format

Latitude/longitude source: GPS Topographic map

(Location of well must be shown on a USGS topo map and
attached to this form if not using GPS.)

4a. FACILITY- The name of the business where the well is located. Complete 4a and 4b.
(If a residential well, skip 4a; complete 4b, well owner information only.)

FACILITY ID # (if applicable) _____

NAME OF FACILITY DAVIDSON CO. LANDFILL

STREET ADDRESS 1242 old Hwy 29

Thomasville N.C. 27360-0024

City or Town

State

Zip Code

4b. CONTACT PERSON/WELL OWNER:

NAME CHARLIE BRUSHWOOD

STREET ADDRESS 1242 old Hwy 29

Thomasville N.C. 27360-0024

City or Town

State

Zip Code

(336) - 242-2284

Area code - Phone number

5. WELL DETAILS:

a. Total Depth: 31.0 ft. Diameter: 2" in.

b. Water Level (Below Measuring Point): 21.70 ft.

Measuring point is 3.0 ft. above land surface.

6. CASING:

Length

Diameter

a. Casing Depth (if known): 31.0 ft. 2" in.

b. Casing Removed: 31.0 ft. 2" in.

7. DISINFECTION: None

(Amount of 65%-75% calcium hypochlorite used)

8. SEALING MATERIAL:

Neat Cement

Sand Cement

Cement _____ lb.

Cement _____ lb.

Water _____ gal.

Water _____ gal.

Bentonite

Bentonite _____ lb.

Type: Slurry _____ Pellets _____

Water _____ gal.

Other

Type material Shur Grout

Amount 80 lbs 50 gals water

9. EXPLAIN METHOD OF EMPLACEMENT OF MATERIAL:

Over drill well to remove all
well materials, Pump Shur Grout
From bottom to top

10. WELL DIAGRAM: Draw a detailed sketch of the well on the back of this form showing total depth, depth and diameter of screens (if any) remaining in the well, gravel interval, intervals of casing perforations, and depths and types of fill materials used.

11. DATE WELL ABANDONED

8-29-07

I DO HEREBY CERTIFY THAT THIS WELL WAS ABANDONED IN ACCORDANCE WITH 15A NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

David Barron

8-29-07

SIGNATURE OF CERTIFIED WELL CONTRACTOR

DATE

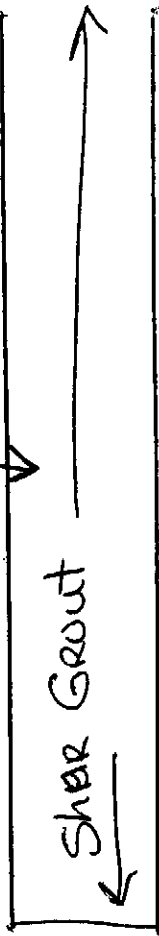
SIGNATURE OF PRIVATE WELL OWNER ABANDONING THE WELL DATE

(The private well owner must be an individual who personally abandons his/her residential well in accordance with 15A NCAC 2C .0113.)

DAVID BARRON

PRINTED NAME OF PERSON ABANDONING THE WELL

ALL well materials removed



31.0'



WELL ABANDONMENT RECORD

North Carolina Department of Environment and Natural Resources- Division of Water Quality

WELL CONTRACTOR CERTIFICATION #

2089

1. WELL CONTRACTOR:

DAVID BARRON

Well Contractor (Individual) Name

ENG. TECTONICS

Well Contractor Company Name

STREET ADDRESS 1720 URGRAVE ST.

W-Salem N.C. 27107

City or Town State

Zip Code

336-724-6994

Area code - Phone number

2. WELL INFORMATION:

SITE WELL ID # (if applicable)

P2#8

STATE WELL PERMIT # (if applicable)

COUNTY WELL PERMIT # (if applicable)

DWQ or OTHER PERMIT # (if applicable)

WELL USE (Circle applicable use): Monitoring Residential

Municipal/Public Industrial/Commercial Agricultural

Recovery Injection Irrigation

Other (list use) WATER LEVELS

3. WELL LOCATION:

COUNTY Davidson QUADRANGLE NAME

NEAREST TOWN: ~~Thomasville~~ Thomasville

1242 old Hwy 29 27360 N.C.

(Street/Road Name, Number, Community, Subdivision, Lot No., Parcel, Zip Code)

TOPOGRAPHIC / LAND SETTING:

Slope Valley ☒ Flat Ridge Other

(Circle appropriate setting)

LATITUDE 35 5056N

LONGITUDE 80 1105W

May be in degrees, minutes, seconds, or in a decimal format

Latitude/longitude source: ☒ GPS Topographic map

(Location of well must be shown on a USGS topo map and attached to this form if not using GPS.)

4a. FACILITY- The name of the business where the well is located. Complete 4a and 4b. (If a residential well, skip 4a; complete 4b, well owner information only.)

FACILITY ID # (if applicable)

NAME OF FACILITY DAVIDSON CO. LANDFILL

STREET ADDRESS 1242 old Hwy 29

Thomasville N.C. 27360

City or Town

State

Zip Code

4b. CONTACT PERSON/WELL OWNER:

NAME CHARLIE BRUSHWOOD

STREET ADDRESS 1242 old Hwy 29

Thomasville N.C. 27360

City or Town

State

Zip Code

336-242-2284

Area code - Phone number

5. WELL DETAILS:

a. Total Depth: 26' ft. Diameter: 2" in.

b. Water Level (Below Measuring Point): 20.0 ft.

Measuring point is 1.85 ft. above land surface.

6. CASING:

Length

Diameter

a. Casing Depth (if known): 26' ft. 2" in.

b. Casing Removed: ft. in.

7. DISINFECTION: NA

(Amount of 65%-75% calcium hypochlorite used)

8. SEALING MATERIAL:

Neat Cement

Sand Cement

Cement lb.

Cement lb.

Water gal.

Water gal.

Bentonite

Bentonite lb.

Type: Slurry Pellets

Water gal.

Other

Type material

EASY GROUT

Amount 100lbs + 50 gals water

9. EXPLAIN METHOD OF EMPLACEMENT OF MATERIAL:

OVER REAM well and Tremie
GROUT FROM BOTTOM TO TOP

ALL well Materials Removed

10. WELL DIAGRAM: Draw a detailed sketch of the well on the back of this form showing total depth, depth and diameter of screens (if any) remaining in the well, gravel interval, intervals of casing perforations, and depths and types of fill materials used.

11. DATE WELL ABANDONED

6-4-07

I DO HEREBY CERTIFY THAT THIS WELL WAS ABANDONED IN ACCORDANCE WITH 15A NCAC 2C. WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

David Barron

6-4-07

SIGNATURE OF CERTIFIED WELL CONTRACTOR

DATE

SIGNATURE OF PRIVATE WELL OWNER ABANDONING THE WELL DATE

(The private well owner must be an individual who personally abandons his/her residential well in accordance with 15A NCAC 2C .0113.)

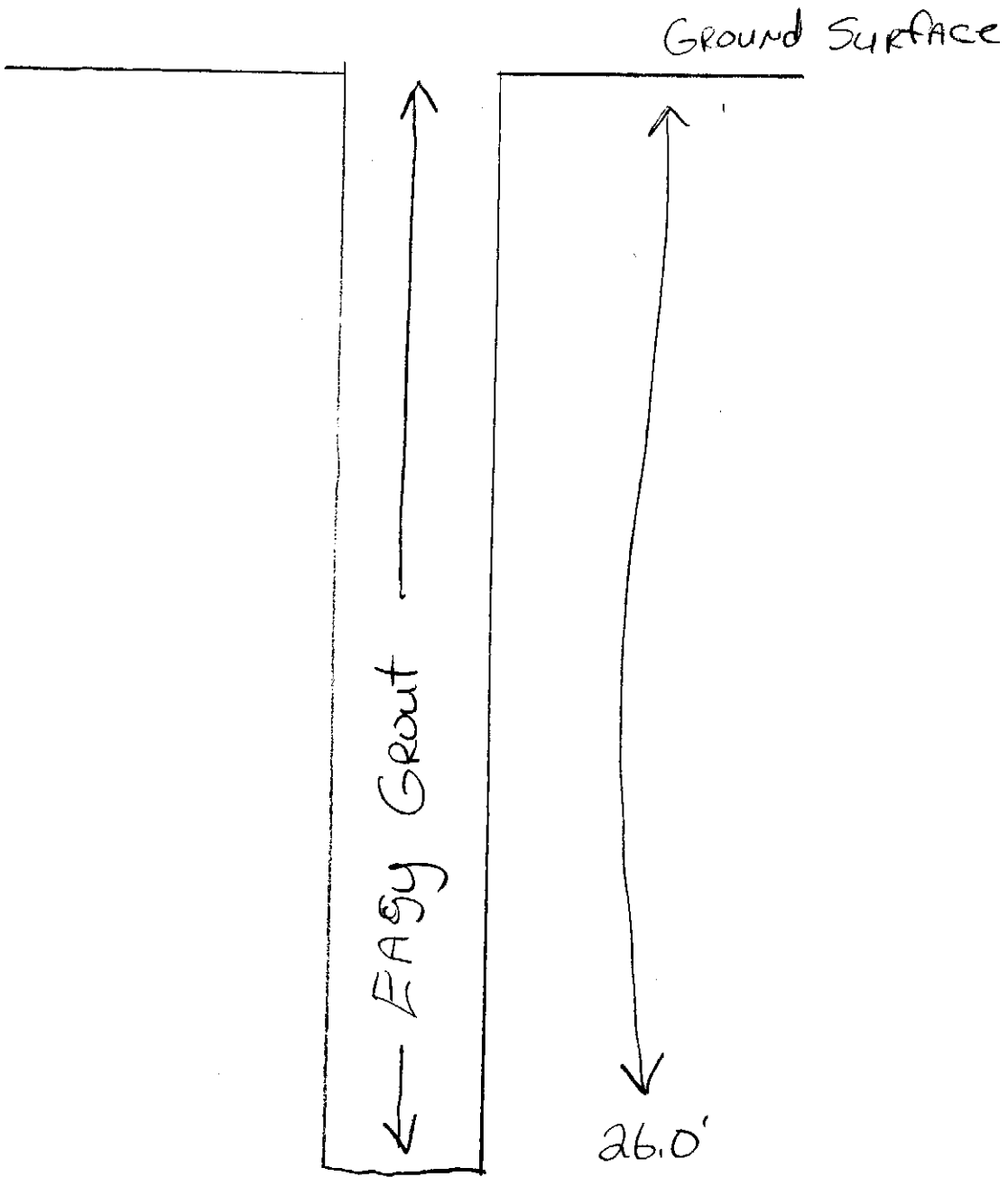
DAVID BARRON

PRINTED NAME OF PERSON ABANDONING THE WELL

Ground Surface

← Easy Grout

26.0'





WELL ABANDONMENT RECORD

North Carolina Department of Environment and Natural Resources- Division of Water Quality

WELL CONTRACTOR CERTIFICATION #

2089

1. WELL CONTRACTOR:

David Barron

Well Contractor (Individual) Name

Eng. Tectonics

Well Contractor Company Name

STREET ADDRESS 1780 VARGRAVE ST.

W-Salem N.C. 27107

City or Town

State

Zip Code

(336) 724-6994

Area code - Phone number

2. WELL INFORMATION:

SITE WELL ID # (if applicable)

P2-9

STATE WELL PERMIT # (if applicable)

COUNTY WELL PERMIT # (if applicable)

DWQ or OTHER PERMIT # (if applicable)

WELL USE (Circle applicable use): Monitoring Residential
Municipal/Public Industrial/Commercial Agricultural
Recovery Injection Irrigation
Other (list use)

3. WELL LOCATION:

COUNTY Davidson QUADRANGLE NAME

NEAREST TOWN: Thomasville N.C.
1242 old Hwy 29 27360-0024

(Street/Road Name, Number, Community, Subdivision, Lot No., Parcel, Zip Code)

TOPOGRAPHIC / LAND SETTING:

Slope Valley Flat Ridge Other

(Circle appropriate setting)

LATITUDE 35° 50.51N

LONGITUDE 80° 10.50W

May be in degrees,
minutes, seconds, or in a
decimal format

Latitude/longitude source: GPS Topographic map

(Location of well must be shown on a USGS topo map and
attached to this form if not using GPS.)

4a. FACILITY- The name of the business where the well is located. Complete 4a and 4b.
(If a residential well, skip 4a; complete 4b, well owner information only.)

FACILITY ID # (if applicable)

NAME OF FACILITY Davidson Co. Landfill

STREET ADDRESS 1242 old Hwy 29

Thomasville N.C.

27360-0024

City or Town

State

Zip Code

4b. CONTACT PERSON/WELL OWNER:

NAME Charlie Brushwood

STREET ADDRESS 1242 old Hwy 29

Thomasville N.C.

27360-0024

City or Town

State

Zip Code

(336) 242-2284

Area code - Phone number

5. WELL DETAILS:

a. Total Depth: 35.0' ft. Diameter: 2" in.

b. Water Level (Below Measuring Point): 33.48 ft.
Measuring point is 3.0 ft. above land surface.

6. CASING:

24' - 4" casing

Length

Diameter

a. Casing Depth (if known): 35' ft. 2" in.

b. Casing Removed: 3' ft. 2" in.

7. DISINFECTION: None

(Amount of 65%-75% calcium hypochlorite used)

8. SEALING MATERIAL:

Neat Cement

Cement _____ lb.
Water _____ gal.

Sand Cement

Cement _____ lb.
Water _____ gal.

Bentonite

Bentonite _____ lb.
Type: Slurry _____ Pellets _____
Water _____ gal.

Other

Type material Shur Grout
Amount 40lbs 25 gals water

9. EXPLAIN METHOD OF EMPLACEMENT OF MATERIAL:

Pump Shur Grout From Bottom of
well to Top

10. WELL DIAGRAM: Draw a detailed sketch of the well on the back of this
form showing total depth, depth and diameter of screens (if any) remaining
in the well, gravel interval, intervals of casing perforations, and depths and
types of fill materials used.

11. DATE WELL ABANDONED

8-29-07

I DO HEREBY CERTIFY THAT THIS WELL WAS ABANDONED IN ACCORDANCE
WITH 15A NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF
THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

David Barron

SIGNATURE OF CERTIFIED WELL CONTRACTOR

8-29-07

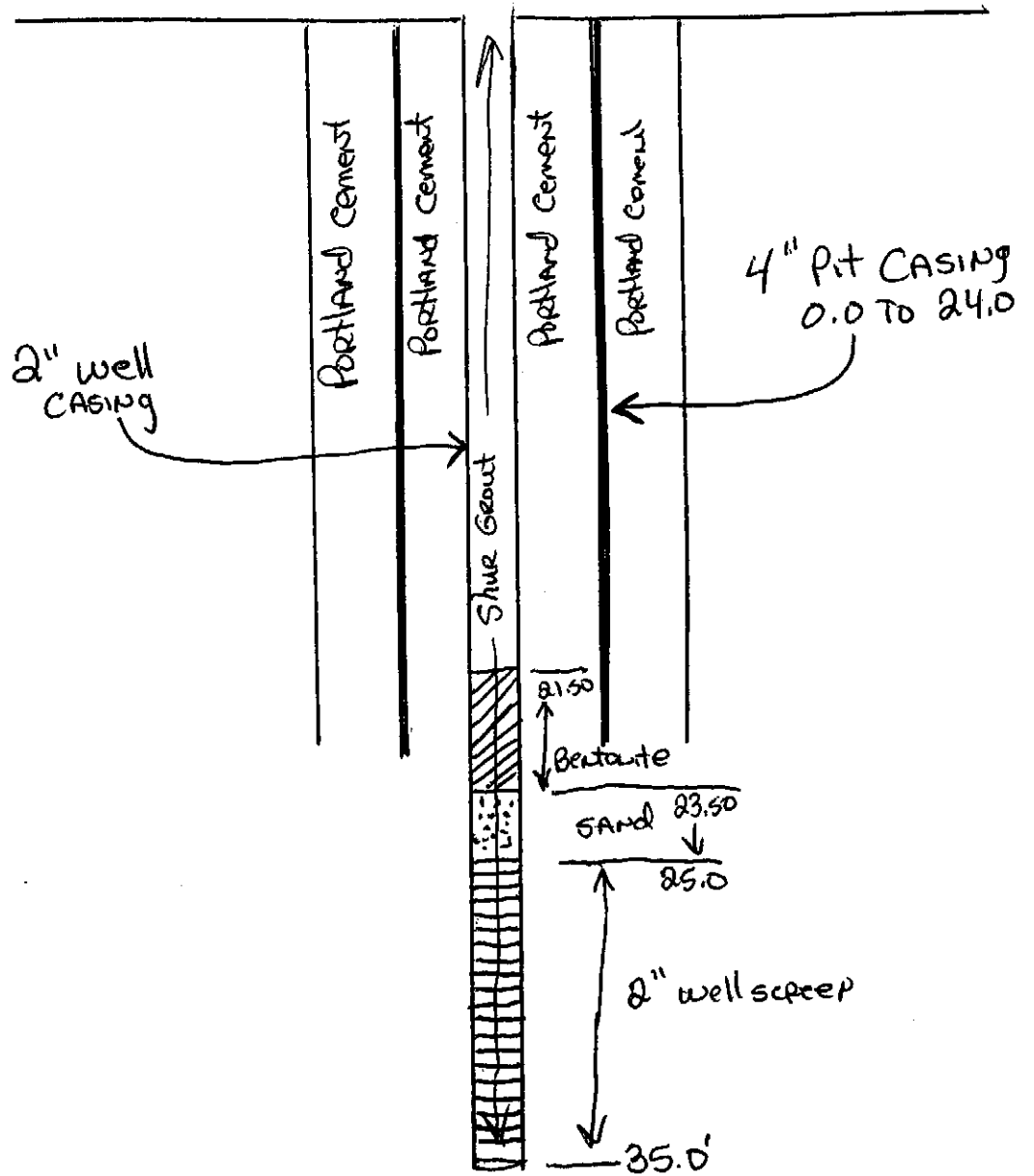
DATE

SIGNATURE OF PRIVATE WELL OWNER ABANDONING THE WELL DATE

(The private well owner must be an individual who personally abandons his/her residential well
in accordance with 15A NCAC 2C .0113.)

DAVID BARRON

PRINTED NAME OF PERSON ABANDONING THE WELL





WELL ABANDONMENT RECORD

North Carolina Department of Environment and Natural Resources- Division of Water Quality

WELL CONTRACTOR CERTIFICATION # 2089

1. WELL CONTRACTOR:

DAVID BARRON

Well Contractor (Individual) Name

ENG. Tectonics

Well Contractor Company Name

STREET ADDRESS 1720 URGRAVE ST.

W-Salem N.C. 27107

City or Town State

Zip Code

336 724-6994

Area code - Phone number

2. WELL INFORMATION:

SITE WELL ID # (if applicable) PZ# 13

STATE WELL PERMIT # (if applicable)

COUNTY WELL PERMIT # (if applicable)

DWQ or OTHER PERMIT # (if applicable)

WELL USE (Circle applicable use): ☒ Monitoring ☐ Residential
☐ Municipal/Public ☐ Industrial/Commercial ☐ Agricultural
☐ Recovery ☐ Injection ☐ Irrigation
Other (list use) Water Levels

3. WELL LOCATION:

COUNTY Davidson QUADRANGLE NAME

NEAREST TOWN: Thomasville

1242 old Hwy 29 27360 N.C.

(Street/Road Name, Number, Community, Subdivision, Lot No., Parcel, Zip Code)

TOPOGRAPHIC / LAND SETTING:

Slope Valley ☒ Flat ☐ Ridge Other

(Circle appropriate setting)

LATITUDE 35° 51' 04" N

LONGITUDE 80° 10' 55" W

May be in degrees,
minutes, seconds, or in a
decimal format

Latitude/longitude source: ☒ GPS ☐ Topographic map

(Location of well must be shown on a USGS topo map and
attached to this form if not using GPS.)

4a. FACILITY - The name of the business where the well is located. Complete 4a and 4b.
(If a residential well, skip 4a; complete 4b, well owner information only.)

FACILITY ID # (if applicable)

NAME OF FACILITY DAVIDSON CO. LANDFILL

STREET ADDRESS 1242 old Hwy 29

Thomasville N.C. 27360

City or Town

State

Zip Code

4b. CONTACT PERSON/WELL OWNER:

NAME Charles Brushwood

STREET ADDRESS 1242 old Hwy 29

Thomasville N.C. 27360

City or Town

State

Zip Code

336 242-2284

Area code - Phone number

5. WELL DETAILS:

a. Total Depth: 60' ft. Diameter: 2" in.

b. Water Level (Below Measuring Point): 49.23 ft.

Measuring point is 2.10 ft. above land surface.

6. CASING:

Length

Diameter

a. Casing Depth (if known): 60' ft. 2" in.

b. Casing Removed: 0 ft. 2" in.

7. DISINFECTION:

NA

(Amount of 65%-75% calcium hypochlorite used)

8. SEALING MATERIAL:

Neat Cement

Sand Cement

Cement lb.

Cement lb.

Water gal.

Water gal.

Bentonite

Bentonite lb.

Type: Slurry Pellets

Water gal.

Other

Type material EASY GROUT

Amount 50 lbs 25 gals water

9. EXPLAIN METHOD OF EMPLACEMENT OF MATERIAL:

Tremie Grout From Bottom
of well to Top

10. WELL DIAGRAM: Draw a detailed sketch of the well on the back of this
form showing total depth, depth and diameter of screens (if any) remaining
in the well, gravel interval, intervals of casing perforations, and depths and
types of fill materials used.

11. DATE WELL ABANDONED

6-5-07

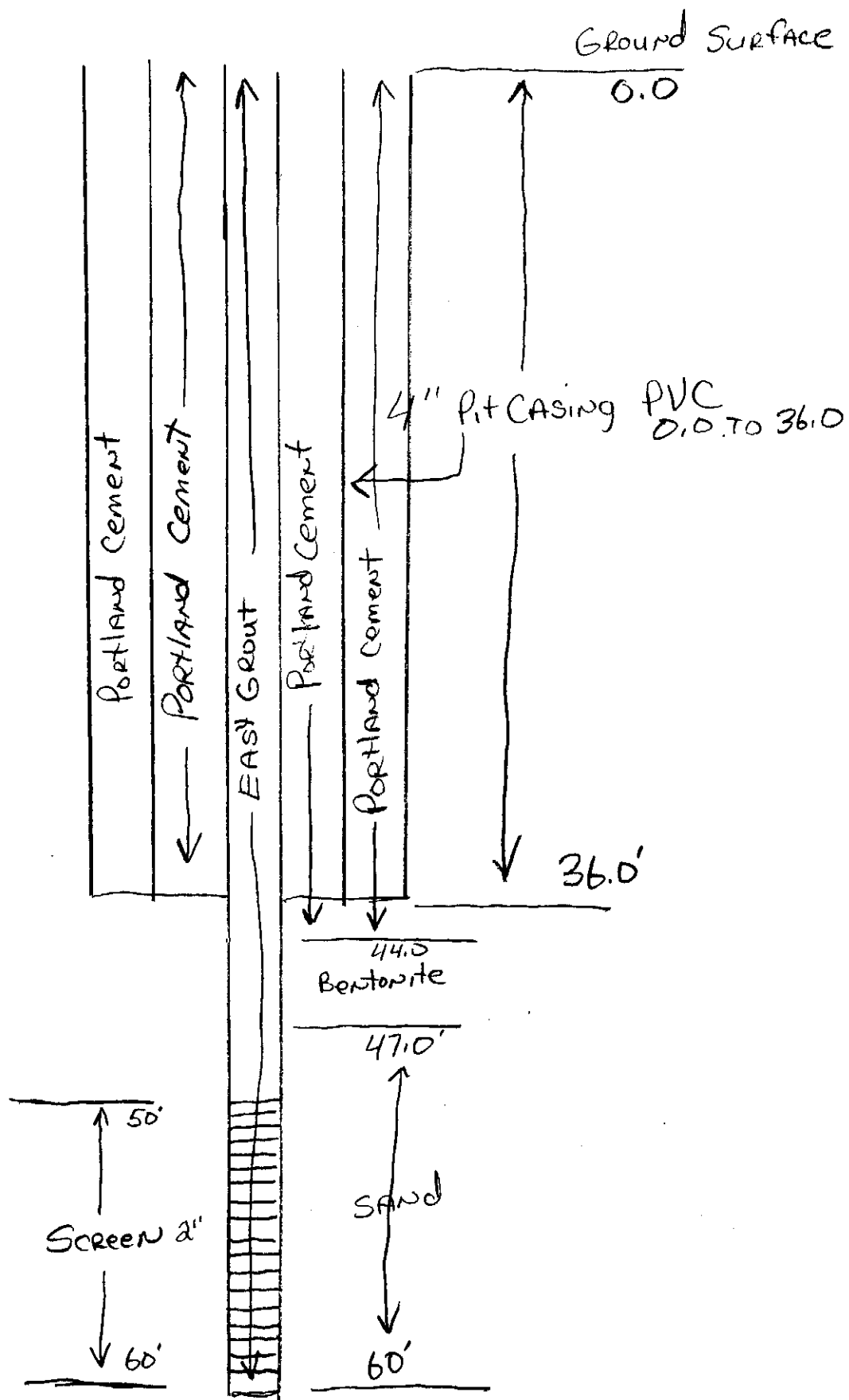
I DO HEREBY CERTIFY THAT THIS WELL WAS ABANDONED IN ACCORDANCE
WITH 15A NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF
THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

David Barron
SIGNATURE OF CERTIFIED WELL CONTRACTOR

6-6-07
DATE

SIGNATURE OF PRIVATE WELL OWNER ABANDONING THE WELL DATE
(The private well owner must be an individual who personally abandons his/her residential well
in accordance with 15A NCAC 2C.0113.)

DAVID BARRON
PRINTED NAME OF PERSON ABANDONING THE WELL





WELL ABANDONMENT RECORD

North Carolina Department of Environment and Natural Resources- Division of Water Quality

WELL CONTRACTOR CERTIFICATION # 2089

1. WELL CONTRACTOR:

DAVID BARRON

Well Contractor (Individual) Name

ENG. TECTONICS

Well Contractor Company Name

STREET ADDRESS 1720 JARGRAVE ST.

W-Salem N.C. 27107

City or Town State

Zip Code

336 724-6994

Area code - Phone number

2. WELL INFORMATION:

SITE WELL ID # (if applicable) 2#28

STATE WELL PERMIT # (if applicable) _____

COUNTY WELL PERMIT # (if applicable) _____

DWQ or OTHER PERMIT # (if applicable) _____

WELL USE (Circle applicable use): Monitoring Residential

Municipal/Public Industrial/Commercial

Agricultural

Recovery Injection Irrigation

Other (list use) Water Levels

3. WELL LOCATION:

COUNTY Davidson QUADRANGLE NAME _____

NEAREST TOWN: Thomasville

1242 old Hwy 29 27360 N.C.

(Street/Road Name, Number, Community, Subdivision, Lot No., Parcel, Zip Code)

TOPOGRAPHIC / LAND SETTING:

Slope Valley Flat Ridge Other _____

(Circle appropriate setting)

LATITUDE 35 5050N

LONGITUDE 80 1107W

May be in degrees,
minutes, seconds, or in a
decimal format

Latitude/longitude source: GPS Topographic map

(Location of well must be shown on a USGS topo map and
attached to this form if not using GPS.)

4a. FACILITY- The name of the business where the well is located. Complete 4a and 4b.
(If a residential well, skip 4a; complete 4b, well owner information only.)

FACILITY ID # (if applicable) _____

NAME OF FACILITY Davidson Co. Landfill

STREET ADDRESS 1242 old Hwy 29.

Thomasville N.C. 27360

City or Town

State

Zip Code

4b. CONTACT PERSON/WELL OWNER:

NAME Charles Brushwood

STREET ADDRESS 1242 old Hwy 29

Thomasville N.C. 27360

City or Town

State

Zip Code

336 242-2284

Area code - Phone number

5. WELL DETAILS:

a. Total Depth: 55' ft. Diameter: 2" in.

b. Water Level (Below Measuring Point): 35.31' ft.

Measuring point is 3.0' ft. above land surface.

6. CASING:

Length

Diameter

a. Casing Depth (if known): 55.0 ft. 2" in.

b. Casing Removed: 55.0 ft. 2" in.

7. DISINFECTION: NA

(Amount of 65%-75% calcium hypochlorite used)

8. SEALING MATERIAL:

Neat Cement

Sand Cement

Cement _____ lb.

Cement _____ lb.

Water _____ gal.

Water _____ gal.

Bentonite

Bentonite _____ lb.

Type: Slurry _____ Pellets _____

Water _____ gal.

Other

Type material EASY GROUT

Amount 200lbs + 100gals water

9. EXPLAIN METHOD OF EMPLACEMENT OF MATERIAL:

Over Ream well, and Tremie
Grout. From Bottom TO TOP

All well materials Removed

10. WELL DIAGRAM: Draw a detailed sketch of the well on the back of this form showing total depth, depth and diameter of screens (if any) remaining in the well, gravel interval, intervals of casing perforations, and depths and types of fill materials used.

11. DATE WELL ABANDONED

6-6-07

I DO HEREBY CERTIFY THAT THIS WELL WAS ABANDONED IN ACCORDANCE WITH 15A NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

David Barron

6-6-07

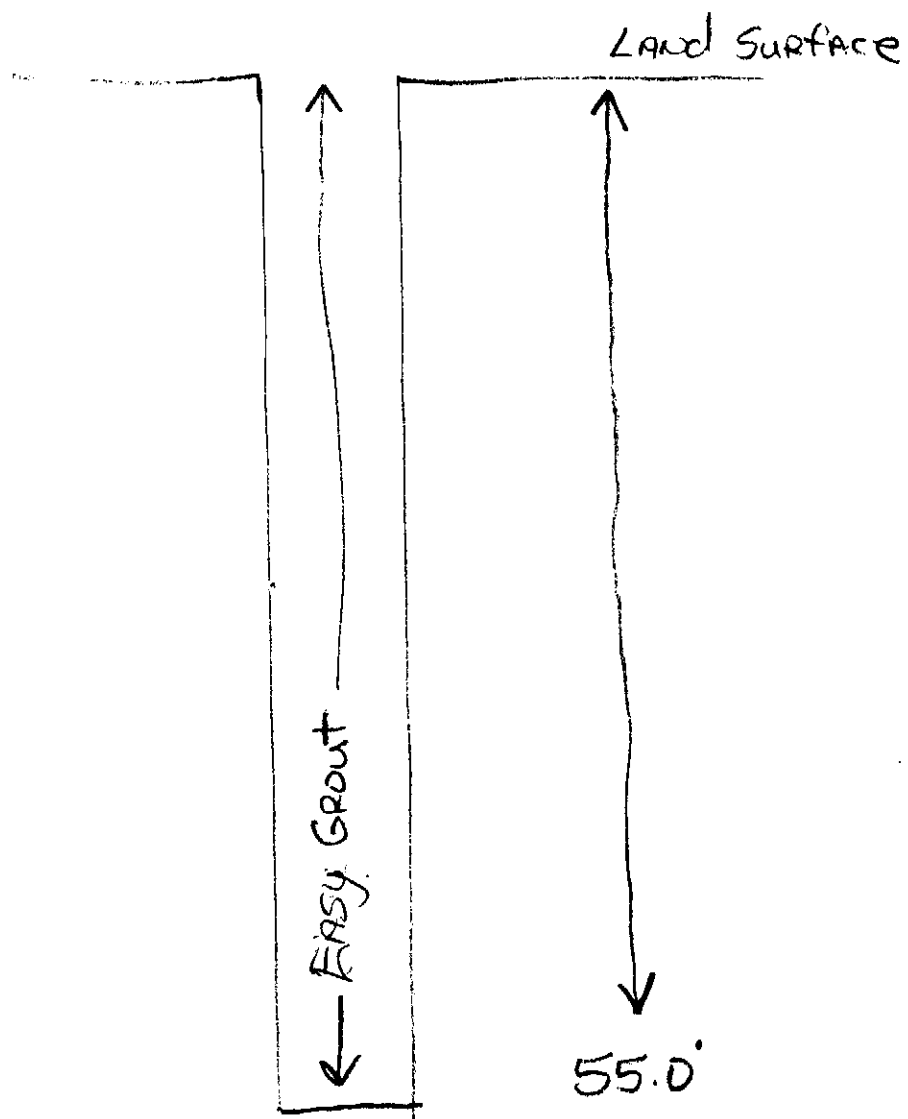
SIGNATURE OF CERTIFIED WELL CONTRACTOR

DATE

SIGNATURE OF PRIVATE WELL OWNER ABANDONING THE WELL DATE
(The private well owner must be an individual who personally abandons his/her residential well in accordance with 15A NCAC 2C .0113.)

DAVID BARRON

PRINTED NAME OF PERSON ABANDONING THE WELL





WELL ABANDONMENT RECORD

North Carolina Department of Environment and Natural Resources- Division of Water Quality

WELL CONTRACTOR CERTIFICATION

2089

1. WELL CONTRACTOR:

DAVID BARRON

Well Contractor (Individual) Name

ENG. Tectonics

Well Contractor Company Name

STREET ADDRESS 1720 VARGRAVE ST.

W-Salem N.C. 27107

City or Town State Zip Code

336-724-6994

Area code - Phone number

2. WELL INFORMATION:

SITE WELL ID # (if applicable)

P2#19

STATE WELL PERMIT # (if applicable)

COUNTY WELL PERMIT # (if applicable)

DWQ or OTHER PERMIT # (if applicable)

WELL USE (Circle applicable use): Monitoring Residential
Municipal/Public Industrial/Commercial Agricultural
Recovery Injection Irrigation
Other (list use) Water Levels

3. WELL LOCATION:

COUNTY Davidson QUADRANGLE NAME

NEAREST TOWN: ~~Thomasville~~ Thomasville

1242 old Hwy 29 27360 N.C.

(Street/Road Name, Number, Community, Subdivision, Lot No., Parcel, Zip Code)

TOPOGRAPHIC / LAND SETTING:

Slope Valley Flat Ridge Other

(Circle appropriate setting)

LATITUDE

35 5103N

LONGITUDE

080 1048W

May be in degrees, minutes, seconds, or in a decimal format

Latitude/longitude source: (GPS) Topographic map

(Location of well must be shown on a USGS topo map and attached to this form if not using GPS.)

4a. FACILITY- The name of the business where the well is located. Complete 4a and 4b. (If a residential well, skip 4a; complete 4b, well owner information only.)

FACILITY ID # (if applicable)

NAME OF FACILITY DAVIDSON CO. LANDFILL

STREET ADDRESS 1242 old Hwy 29

Thomasville N.C. 27360

City or Town State Zip Code

4b. CONTACT PERSON/WELL OWNER:

NAME CHARLIE BRUSHWOOD

STREET ADDRESS 1242 old Hwy 29

Thomasville N.C. 27360

City or Town State Zip Code

336-242-2284

Area code - Phone number

5. WELL DETAILS:

a. Total Depth: 60' ft. Diameter: 60' in.

b. Water Level (Below Measuring Point): 23.98 ft.

Measuring point is 2.90 ft. above land surface.

6. CASING:

Length Diameter

a. Casing Depth (if known): 60' ft. 2" in.

b. Casing Removed: 0 ft. 2" in.

7. DISINFECTION:

(Amount of 65%-75% calcium hypochlorite used)

8. SEALING MATERIAL:

Neat Cement

Sand Cement

Cement lb.
Water gal.

Cement lb.
Water gal.

Bentonite

Bentonite lb.
Type: Slurry Pellets
Water gal.

Other

Type material Easy Grout
Amount 50lbs + 25 gals water

9. EXPLAIN METHOD OF EMPLACEMENT OF MATERIAL:

Tremie Grout From Bottom
of Well To Top

10. WELL DIAGRAM: Draw a detailed sketch of the well on the back of this form showing total depth, depth and diameter of screens (if any) remaining in the well, gravel interval, intervals of casing perforations, and depths and types of fill materials used.

11. DATE WELL ABANDONED

6-4-07

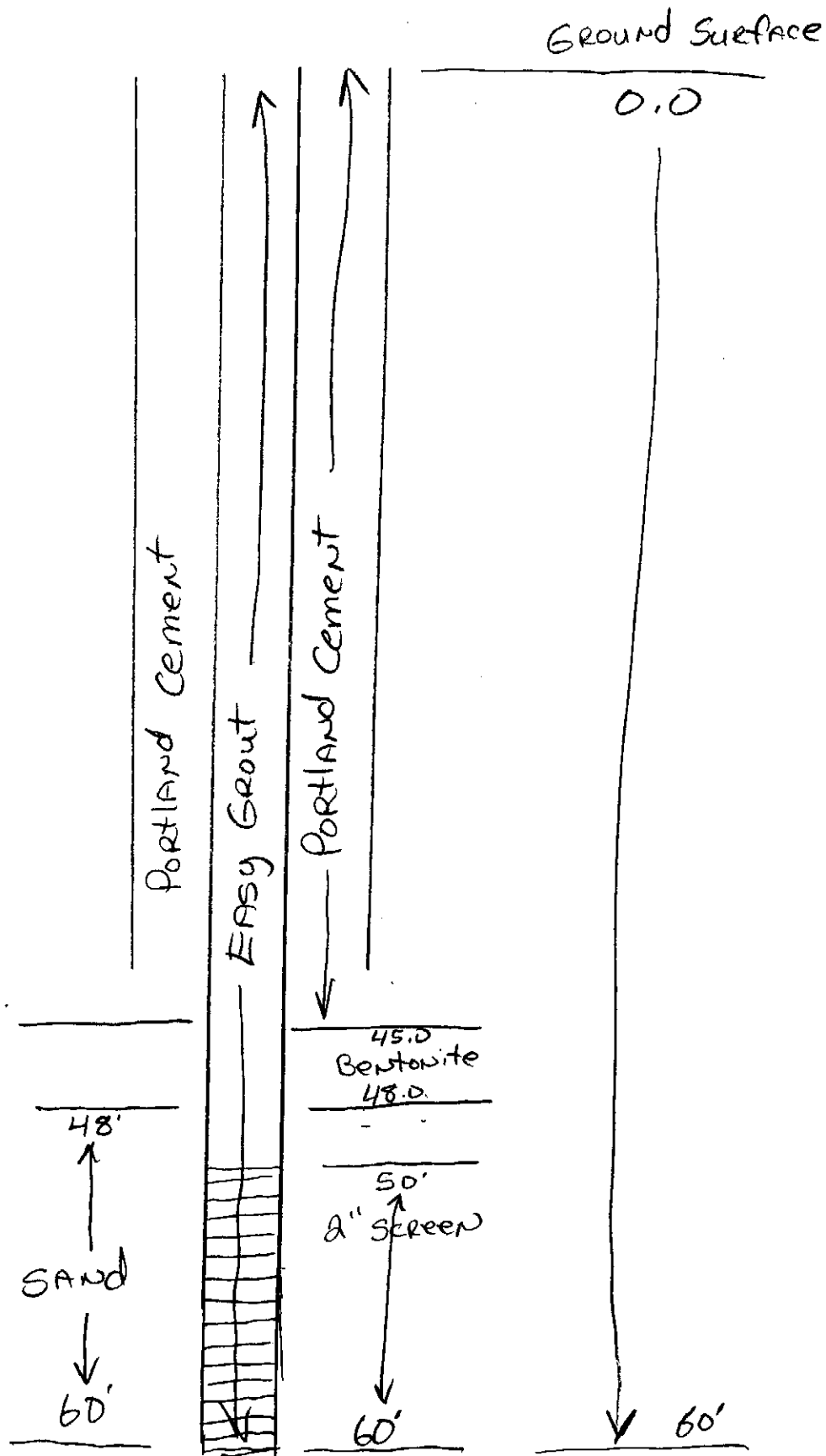
I DO HEREBY CERTIFY THAT THIS WELL WAS ABANDONED IN ACCORDANCE WITH 15A NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

DAVID BARRON
SIGNATURE OF CERTIFIED WELL CONTRACTOR

6-6-07
DATE

SIGNATURE OF PRIVATE WELL OWNER ABANDONING THE WELL DATE
(The private well owner must be an individual who personally abandons his/her residential well in accordance with 15A NCAC 2C .0113.)

DAVID BARRON
PRINTED NAME OF PERSON ABANDONING THE WELL





WELL ABANDONMENT RECORD

North Carolina Department of Environment and Natural Resources- Division of Water Quality

WELL CONTRACTOR CERTIFICATION #

2089

1. WELL CONTRACTOR:

DAVID BARRON

Well Contractor (Individual) Name

ENG. TECTONICS

Well Contractor Company Name

STREET ADDRESS 1720 JARGRAVE ST.

W-SALOM N.C. 27107

City or Town State

Zip Code

336 - 724-6994

Area code - Phone number

2. WELL INFORMATION:

SITE WELL ID # (if applicable)

P229

STATE WELL PERMIT # (if applicable)

COUNTY WELL PERMIT # (if applicable)

DWQ or OTHER PERMIT # (if applicable)

WELL USE (Circle applicable use): Monitoring Residential
Municipal/Public Industrial/Commercial Agricultural
Recovery Injection Irrigation
Other (list use) Water Levels

3. WELL LOCATION:

COUNTY Davidson QUADRANGLE NAME

NEAREST TOWN: ~~Thomasville~~ Thomasville
1242 old Hwy 29 27360 N.C.

(Street/Road Name, Number, Community, Subdivision, Lot No., Parcel, Zip Code)

TOPOGRAPHIC / LAND SETTING:

Slope Valley ☒ Flat Ridge Other
(Circle appropriate setting)

LATITUDE 35 5053N

LONGITUDE 80 1101W

May be in degrees,
minutes, seconds, or in a
decimal format

Latitude/longitude source: ☒ GPS Topographic map
(Location of well must be shown on a USGS topo map and
attached to this form if not using GPS.)

4a. FACILITY. The name of the business where the well is located. Complete 4a and 4b.
(If a residential well, skip 4a; complete 4b, well owner information only.)

FACILITY ID # (if applicable)

NAME OF FACILITY DAVIDSON CO. LANDFILL

STREET ADDRESS 1242 old Hwy 29

Thomasville N.C. 27360

City or Town

State

Zip Code

4b. CONTACT PERSON/WELL OWNER:

NAME Charle Brushwood

STREET ADDRESS 1242 old Hwy 29

Thomasville N.C. 27360

City or Town

State

Zip Code

336 - 242-2284

Area code - Phone number

5. WELL DETAILS:

a. Total Depth: 56' ft. Diameter: 2' in.

b. Water Level (Below Measuring Point): 47.24 ft.

Measuring point is 2.90 ft. above land surface.

6. CASING:

Length

Diameter

a. Casing Depth (if known): 56' ft. 2' in.

b. Casing Removed: 0' ft. 2' in.

7. DISINFECTION: NA

(Amount of 65%-75% calcium hypochlorite used)

8. SEALING MATERIAL:

Neat Cement

Sand-Cement

Cement _____ lb.

Cement _____ lb.

Water _____ gal.

Water _____ gal.

Bentonite

Bentonite _____ lb.

Type: Slurry _____ Pellets _____

Water _____ gal.

Other

Type material

EAGY Grout

Amount 50 lbs 25 gals water

9. EXPLAIN METHOD OF EMPLACEMENT OF MATERIAL:

Tremie Grout From Bottom
of well To Top

10. WELL DIAGRAM: Draw a detailed sketch of the well on the back of this
form showing total depth, depth and diameter of screens (if any) remaining
in the well, gravel interval, intervals of casing perforations, and depths and
types of fill materials used.

11. DATE WELL ABANDONED

6-6-07

I DO HEREBY CERTIFY THAT THIS WELL WAS ABANDONED IN ACCORDANCE
WITH 15A NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF
THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

David Barron

6-6-07

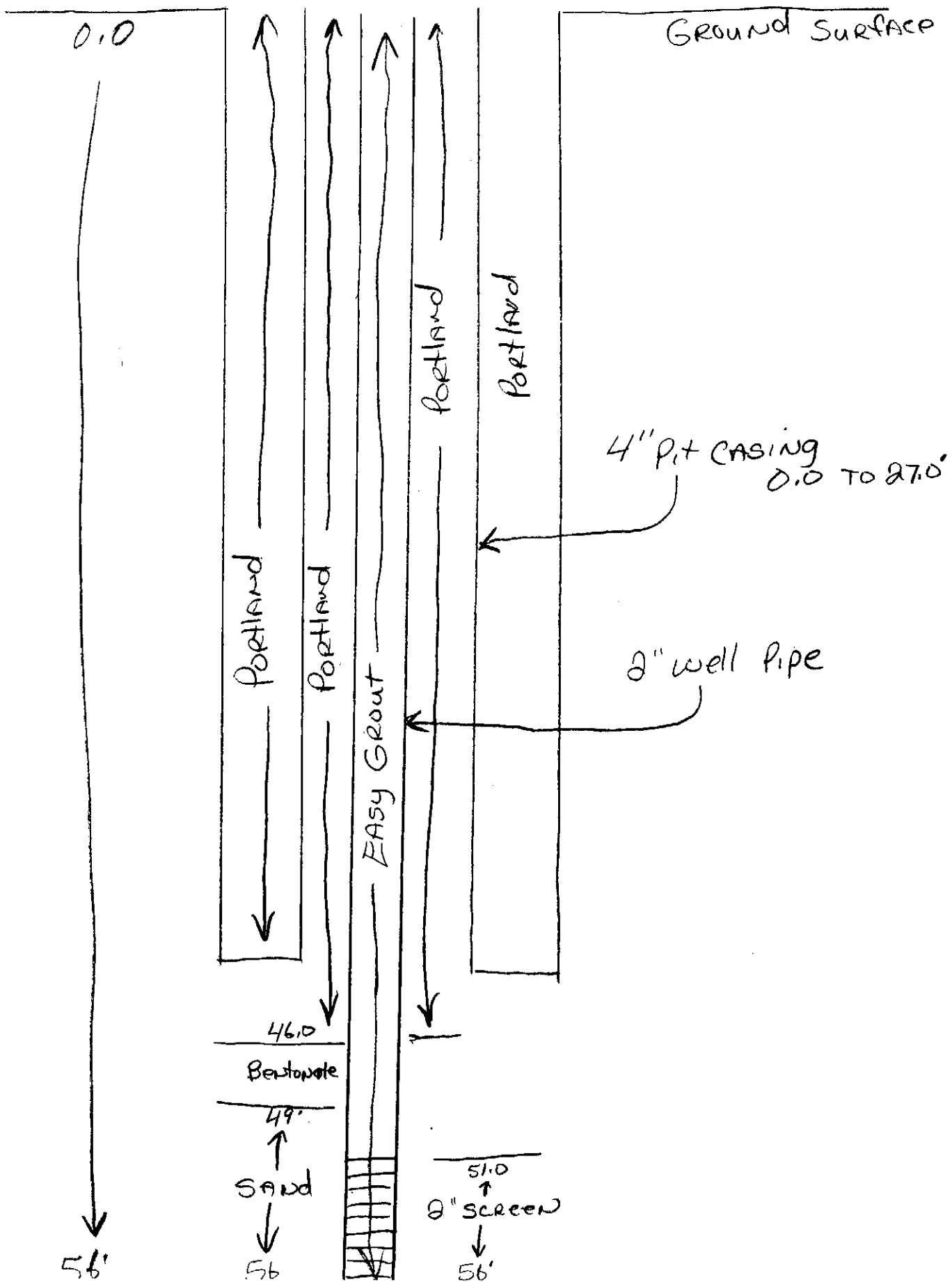
SIGNATURE OF CERTIFIED WELL CONTRACTOR

DATE

SIGNATURE OF PRIVATE WELL OWNER ABANDONING THE WELL DATE
(The private well owner must be an individual who personally abandons his/her residential well
in accordance with 15A NCAC 2C .0113.)

DAVID BARRON

PRINTED NAME OF PERSON ABANDONING THE WELL





WELL ABANDONMENT RECORD

North Carolina Department of Environment and Natural Resources- Division of Water Quality

WELL CONTRACTOR CERTIFICATION #

2089

1. WELL CONTRACTOR:

DAVID BARRON

Well Contractor (Individual) Name

ENG. TETONICS

Well Contractor Company Name

STREET ADDRESS 1720 JARGRAVE ST.

W-Salem N.C. 27107

City or Town State

Zip Code

336 724-6994

Area code - Phone number

2. WELL INFORMATION:

SITE WELL ID # (if applicable)

P2[#] 30

STATE WELL PERMIT # (if applicable)

COUNTY WELL PERMIT # (if applicable)

DWQ or OTHER PERMIT # (if applicable)

WELL USE (Circle applicable use): Monitoring Residential
Municipal/Public Industrial/Commercial Agricultural
Recovery Injection Irrigation
Other (list use) WATER LEVELS

3. WELL LOCATION:

COUNTY Davidson QUADRANGLE NAME

NEAREST TOWN: ~~Davidson~~ Thomasville
1242 Old Hwy 29 27360 N.C.

(Street/Road Name, Number, Community, Subdivision, Lot No., Parcel, Zip Code)

TOPOGRAPHIC / LAND SETTING:

Slope Valley ☒ Flat Ridge Other
(Circle appropriate setting)

LATITUDE 35 5053N

LONGITUDE 80 1103W

May be in degrees,
minutes, seconds, or in a
decimal format

Latitude/longitude source: ☒ GPS Topographic map

(Location of well must be shown on a USGS topo map and
attached to this form if not using GPS.)

4a. FACILITY- The name of the business where the well is located. Complete 4a and 4b.
(If a residential well, skip 4a; complete 4b, well owner information only.)

FACILITY ID # (if applicable)

NAME OF FACILITY DAVIDSON CO. LANDFILL

STREET ADDRESS 1242 Old Hwy 29

Thomasville N.C. 27360

City or Town

State

Zip Code

4b. CONTACT PERSON/WELL OWNER:

NAME CHARLIE BRUSHWOOD

STREET ADDRESS 1242 Old Hwy 29

Thomasville N.C. 27360

City or Town

State

Zip Code

336 242-2284

Area code - Phone number

5. WELL DETAILS:

a. Total Depth: 40' ft. Diameter: 2" in.

b. Water Level (Below Measuring Point): 36.53 ft.

Measuring point is 2.90 ft. above land surface.

6. CASING:

Length

Diameter

a. Casing Depth (if known): 40' ft. 2" in.

b. Casing Removed: 40' ft. 2" in.

7. DISINFECTION:

NA

(Amount of 65%-75% calcium hypochlorite used)

8. SEALING MATERIAL:

Neat Cement

Sand Cement

Cement _____ lb.

Cement _____ lb.

Water _____ gal.

Water _____ gal.

Bentonite

Bentonite _____ lb.

Type: Slurry _____ Pellets _____

Water _____ gal.

Other

Type material

EASY GROUT

Amount 150 lbs 75 gals water

9. EXPLAIN METHOD OF EMPLACEMENT OF MATERIAL:

Over Ream well and Tremie
Grout From Bottom To Top
Removed all well materials

10. WELL DIAGRAM: Draw a detailed sketch of the well on the back of this form showing total depth, depth and diameter of screens (if any) remaining in the well, gravel interval, intervals of casing perforations, and depths and types of fill materials used.

11. DATE WELL ABANDONED

6-1-07

I DO HEREBY CERTIFY THAT THIS WELL WAS ABANDONED IN ACCORDANCE WITH 15A NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

DAVID BARRON

6-6-07

SIGNATURE OF CERTIFIED WELL CONTRACTOR

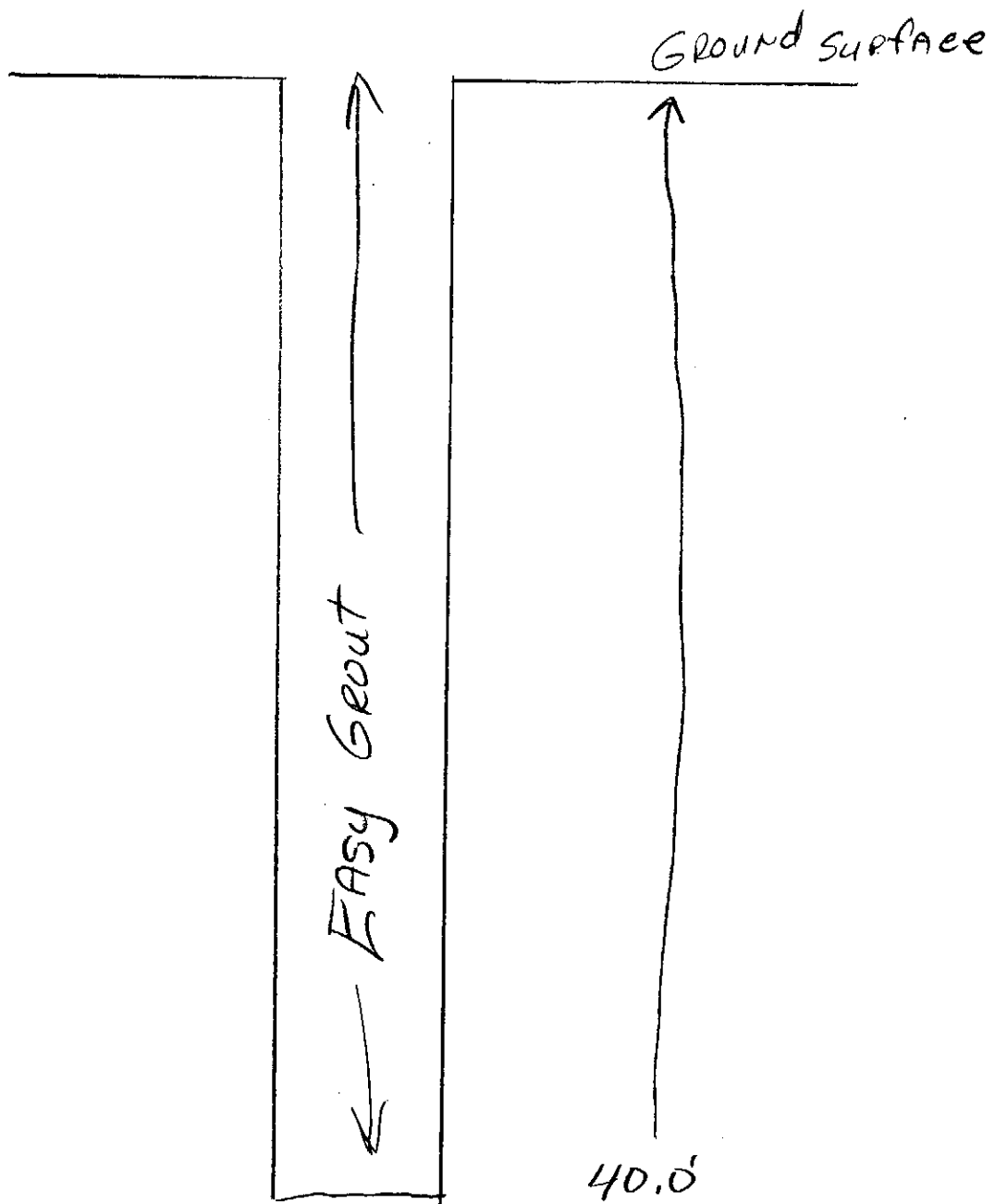
DATE

SIGNATURE OF PRIVATE WELL OWNER ABANDONING THE WELL DATE

(The private well owner must be an individual who personally abandons his/her residential well in accordance with 15A NCAC 2C.0113.)

DAVID BARRON

PRINTED NAME OF PERSON ABANDONING THE WELL





WELL ABANDONMENT RECORD

North Carolina Department of Environment and Natural Resources- Division of Water Quality

WELL CONTRACTOR CERTIFICATION #

2089

1. WELL CONTRACTOR:

DAVID BARRON

Well Contractor (Individual) Name

ENG. TECTONICS

Well Contractor Company Name

STREET ADDRESS 1720 JARGRAVE ST.

W-Salem N.C. 27107

City or Town

State

Zip Code

336-724-6994

Area code - Phone number

2. WELL INFORMATION:

SITE WELL ID # (if applicable)

PZ#31

STATE WELL PERMIT # (if applicable)

COUNTY WELL PERMIT # (if applicable)

DWQ or OTHER PERMIT # (if applicable)

WELL USE (Circle applicable use): Monitoring Residential
Municipal/Public Industrial/Commercial Agricultural
Recovery Injection Irrigation
Other (list use) Water Levels

3. WELL LOCATION:

COUNTY Davidson QUADRANGLE NAME

NEAREST TOWN: ~~Davidson~~ Thomasville
1242 Old Hwy 29 27360 N.C.

(Street/Road Name, Number, Community, Subdivision, Lot No., Parcel, Zip Code)

TOPOGRAPHIC / LAND SETTING:

Slope Valley ☒ Flat Ridge Other

(Circle appropriate setting)

LATITUDE 35 5056N

LONGITUDE 80 1102W

May be in degrees, minutes, seconds, or in a decimal format

Latitude/longitude source: ☒ GPS Topographic map
(Location of well must be shown on a USGS topo map and attached to this form if not using GPS.)

4a. FACILITY- The name of the business where the well is located. Complete 4a and 4b.
(If a residential well, skip 4a; complete 4b, well owner information only.)

FACILITY ID # (if applicable)

NAME OF FACILITY DAVIDSON CO. LANDFILL

STREET ADDRESS 1242 Old Hwy 29

Thomasville N.C. 27360

City or Town

State

Zip Code

4b. CONTACT PERSON/WELL OWNER:

NAME Charlie Brushwood

STREET ADDRESS 1242 Old Hwy 29

Thomasville N.C. 27360

City or Town

State

Zip Code

336-242-2284

Area code - Phone number

5. WELL DETAILS:

a. Total Depth: 42.0 ft. Diameter: 2" in.

b. Water Level (Below Measuring Point): 33.56 ft.

Measuring point is 3.10 ft. above land surface.

6. CASING:

Length

Diameter

a. Casing Depth (if known): 42' ft. 2" in.

b. Casing Removed: 0 ft. 2" in.

7. DISINFECTION:

(Amount of 65%-75% calcium hypochlorite used)

8. SEALING MATERIAL:

Neat Cement

Sand Cement

Cement _____ lb.

Cement _____ lb.

Water _____ gal.

Water _____ gal.

Bentonite

Bentonite _____ lb.

Type: Slurry _____ Pellets _____

Water _____ gal.

Other

Type material Easy Grout

Amount 50 lbs + 25 gals water

9. EXPLAIN METHOD OF EMPLACEMENT OF MATERIAL:

Tremie Grout From Bottom
of Well to Top

10. WELL DIAGRAM: Draw a detailed sketch of the well on the back of this form showing total depth, depth and diameter of screens (if any) remaining in the well, gravel interval, intervals of casing perforations, and depths and types of fill materials used.

11. DATE WELL ABANDONED

6-1-07

I DO HEREBY CERTIFY THAT THIS WELL WAS ABANDONED IN ACCORDANCE WITH 15A NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

David Barron

6-6-07

SIGNATURE OF CERTIFIED WELL CONTRACTOR

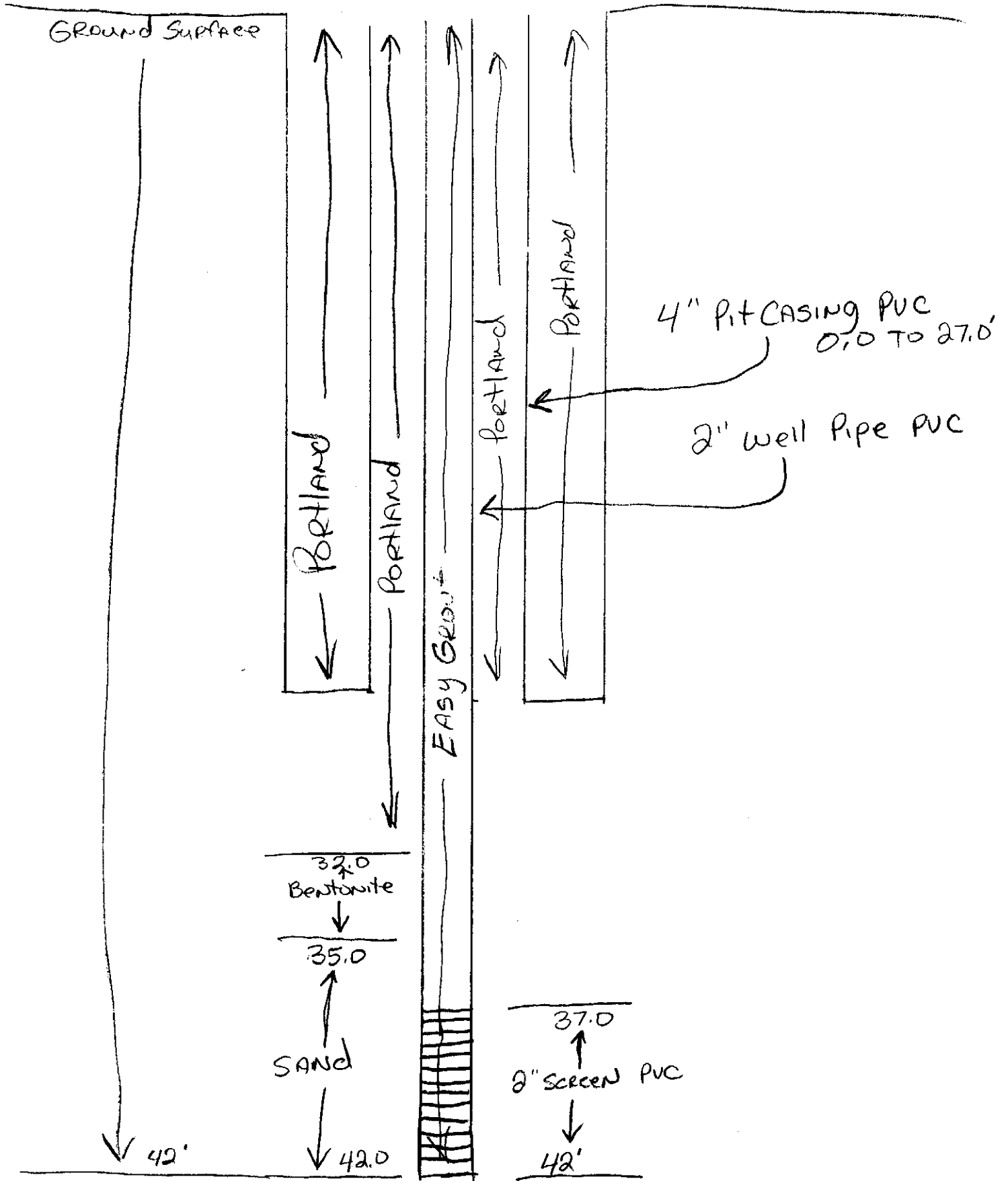
DATE

SIGNATURE OF PRIVATE WELL OWNER ABANDONING THE WELL DATE

(The private well owner must be an individual who personally abandons his/her residential well in accordance with 15A NCAC 2C .0113.)

DAVID BARRON

PRINTED NAME OF PERSON ABANDONING THE WELL





WELL ABANDONMENT RECORD

North Carolina Department of Environment and Natural Resources- Division of Water Quality

WELL CONTRACTOR CERTIFICATION #

2089

1. WELL CONTRACTOR:

DAVID BARRON

Well Contractor (Individual) Name

ENG. TECTONICS

Well Contractor Company Name

STREET ADDRESS 1720 VARGRAVE ST.

W-Salem N.C. 27107

City or Town State Zip Code

336-724-6994

Area code - Phone number

2. WELL INFORMATION:

SITE WELL ID # (if applicable)

P2[±] 320

STATE WELL PERMIT # (if applicable)

COUNTY WELL PERMIT # (if applicable)

DWQ or OTHER PERMIT # (if applicable)

WELL USE (Circle applicable use): Monitoring Residential
Municipal/Public Industrial/Commercial Agricultural
Recovery Injection Irrigation
Other (list use) Water Levels

3. WELL LOCATION:

COUNTY Davidson QUADRANGLE NAME

NEAREST TOWN: ~~Thomasville~~ Thomasville
1242 Old Hwy 29 27360 N.C.

(Street/Road Name, Number, Community, Subdivision, Lot No., Parcel, Zip Code)

TOPOGRAPHIC / LAND SETTING:

Slope Valley ☒ Flat ☐ Ridge ☐ Other
(Circle appropriate setting)

LATITUDE 35 5055N

LONGITUDE 80 1107W

May be in degrees,
minutes, seconds, or in a
decimal format

Latitude/longitude source: ☒ GPS ☐ Topographic map
(Location of well must be shown on a USGS topo map and
attached to this form if not using GPS.)

4a. FACILITY. The name of the business where the well is located. Complete 4a and 4b.
(If a residential well, skip 4a; complete 4b, well owner information only.)

FACILITY ID # (if applicable)

NAME OF FACILITY DAVIDSON CO. LANDFILL

STREET ADDRESS 1242 Old Hwy 29

Thomasville N.C. 27360

City or Town State Zip Code

4b. CONTACT PERSON/WELL OWNER:

NAME Charlie Brushwood

STREET ADDRESS 1242 Old Hwy 29

Thomasville N.C. 27360

City or Town State Zip Code

336-242-2284

Area code - Phone number

5. WELL DETAILS:

a. Total Depth: 59' ft. Diameter: 2" in.

b. Water Level (Below Measuring Point): 35.90 ft.
Measuring point is 3.10 ft. above land surface.

6. CASING:

Length Diameter

a. Casing Depth (if known): 59' ft. 2" in.

b. Casing Removed: 0 ft. 2" in.

7. DISINFECTION:

(Amount of 65%-75% calcium hypochlorite used)

8. SEALING MATERIAL:

Neat Cement

Sand Cement

Cement _____ lb.
Water _____ gal.

Cement _____ lb.
Water _____ gal.

Bentonite

Bentonite _____ lb.
Type: Slurry _____ Pellets _____
Water _____ gal.

Other

Type material Easy Grout
Amount 50 lbs 25 gals water

9. EXPLAIN METHOD OF EMPLACEMENT OF MATERIAL:

Tremie Grout From Bottom
of well To Top

10. WELL DIAGRAM: Draw a detailed sketch of the well on the back of this
form showing total depth, depth and diameter of screens (if any) remaining
in the well, gravel interval, intervals of casing perforations, and depths and
types of fill materials used.

11. DATE WELL ABANDONED

6-1-07

I DO HEREBY CERTIFY THAT THIS WELL WAS ABANDONED IN ACCORDANCE
WITH 15A NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF
THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

David Barron

6-6-07

SIGNATURE OF CERTIFIED WELL CONTRACTOR

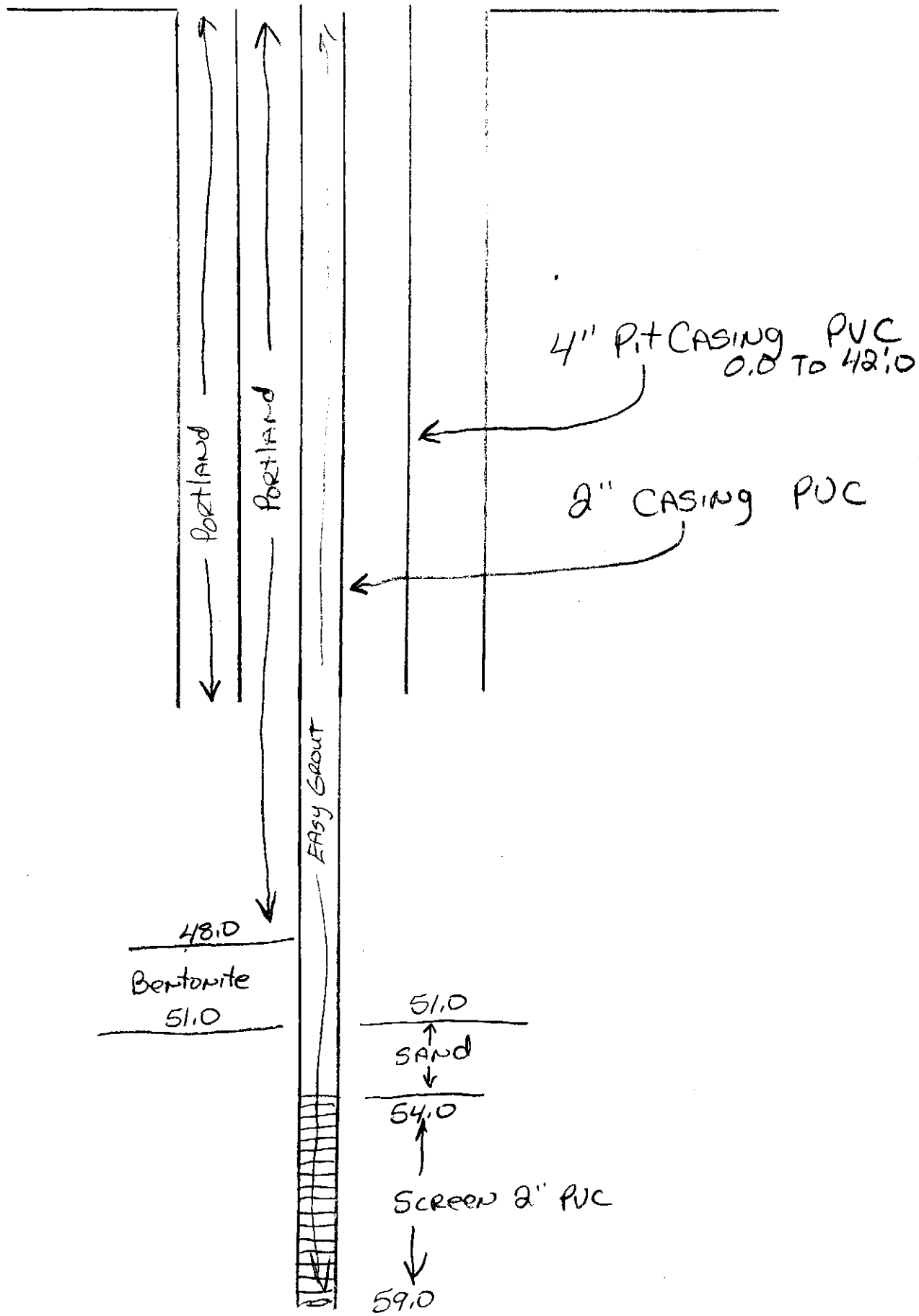
DATE

SIGNATURE OF PRIVATE WELL OWNER ABANDONING THE WELL DATE
(The private well owner must be an individual who personally abandons his/her residential well
in accordance with 15A NCAC 2C .0113.)

DAVID BARRON

PRINTED NAME OF PERSON ABANDONING THE WELL

GROUND SURFACE





WELL ABANDONMENT RECORD

North Carolina Department of Environment and Natural Resources- Division of Water Quality

WELL CONTRACTOR CERTIFICATION #

2089

1. WELL CONTRACTOR:

DAVID BARRON

Well Contractor (Individual) Name

ENG. Tectonics

Well Contractor Company Name

STREET ADDRESS 1720 JARGRAVE ST.

W-Salem N.C. 27107

City or Town State Zip Code

336-724-6994

Area code - Phone number

2. WELL INFORMATION:

SITE WELL ID # (if applicable)

PZ#32

STATE WELL PERMIT # (if applicable)

COUNTY WELL PERMIT # (if applicable)

DWQ or OTHER PERMIT # (if applicable)

WELL USE (Circle applicable use): Monitoring Residential
Municipal/Public Industrial/Commercial Agricultural
Recovery Injection Irrigation
Other (list use) Water Levels

3. WELL LOCATION:

COUNTY Davidson QUADRANGLE NAME

NEAREST TOWN: Thomasville

1242 Old Hwy 29 27360 N.C.

(Street/Road Name, Number, Community, Subdivision, Lot No., Parcel, Zip Code)

TOPOGRAPHIC / LAND SETTING:

Slope Valley ☒ Flat ☐ Ridge ☐ Other ☐
(Circle appropriate setting)

LATITUDE 35 5055N

LONGITUDE 80 1107W

May be in degrees,
minutes, seconds, or in a
decimal format

Latitude/longitude source: GPS Topographic map

(Location of well must be shown on a USGS topo map and
attached to this form if not using GPS.)

4a. FACILITY- The name of the business where the well is located. Complete 4a and 4b.
(If a residential well, skip 4a; complete 4b, well owner information only.)

FACILITY ID # (if applicable)

NAME OF FACILITY DAVIDSON CO. LANDFILL

STREET ADDRESS 1242 Old Hwy 29

Thomasville N.C. 27360

City or Town State Zip Code

4b. CONTACT PERSON/WELL OWNER:

NAME CHARLIE BRUSHWOOD

STREET ADDRESS 1242 Old Hwy 29

Thomasville N.C. 27360

City or Town State Zip Code

336-242-2284

Area code - Phone number

5. WELL DETAILS:

a. Total Depth: 44 ft. Diameter: 2" in.

b. Water Level (Below Measuring Point): 38.83 ft.

Measuring point is 2.70 ft. above land surface.

6. CASING:

Length Diameter

a. Casing Depth (if known): 44 ft. 2" in.

b. Casing Removed: 44 ft. 2" in.

7. DISINFECTION:

NA

(Amount of 65%-75% calcium hypochlorite used)

8. SEALING MATERIAL:

Neat Cement

Sand Cement

Cement _____ lb.
Water _____ gal.

Cement _____ lb.
Water _____ gal.

Bentonite

Bentonite _____ lb.
Type: Slurry _____ Pellets _____
Water _____ gal.

Other

Type material Easy Grout
Amount 150 lbs 75 gals water

9. EXPLAIN METHOD OF EMPLACEMENT OF MATERIAL:

Over Ream well and Tremie
Grout From Bottom To Top

Removed all well materials

10. WELL DIAGRAM: Draw a detailed sketch of the well on the back of this
form showing total depth, depth and diameter of screens (if any) remaining
in the well, gravel interval, intervals of casing perforations, and depths and
types of fill materials used.

11. DATE WELL ABANDONED

6-1-07

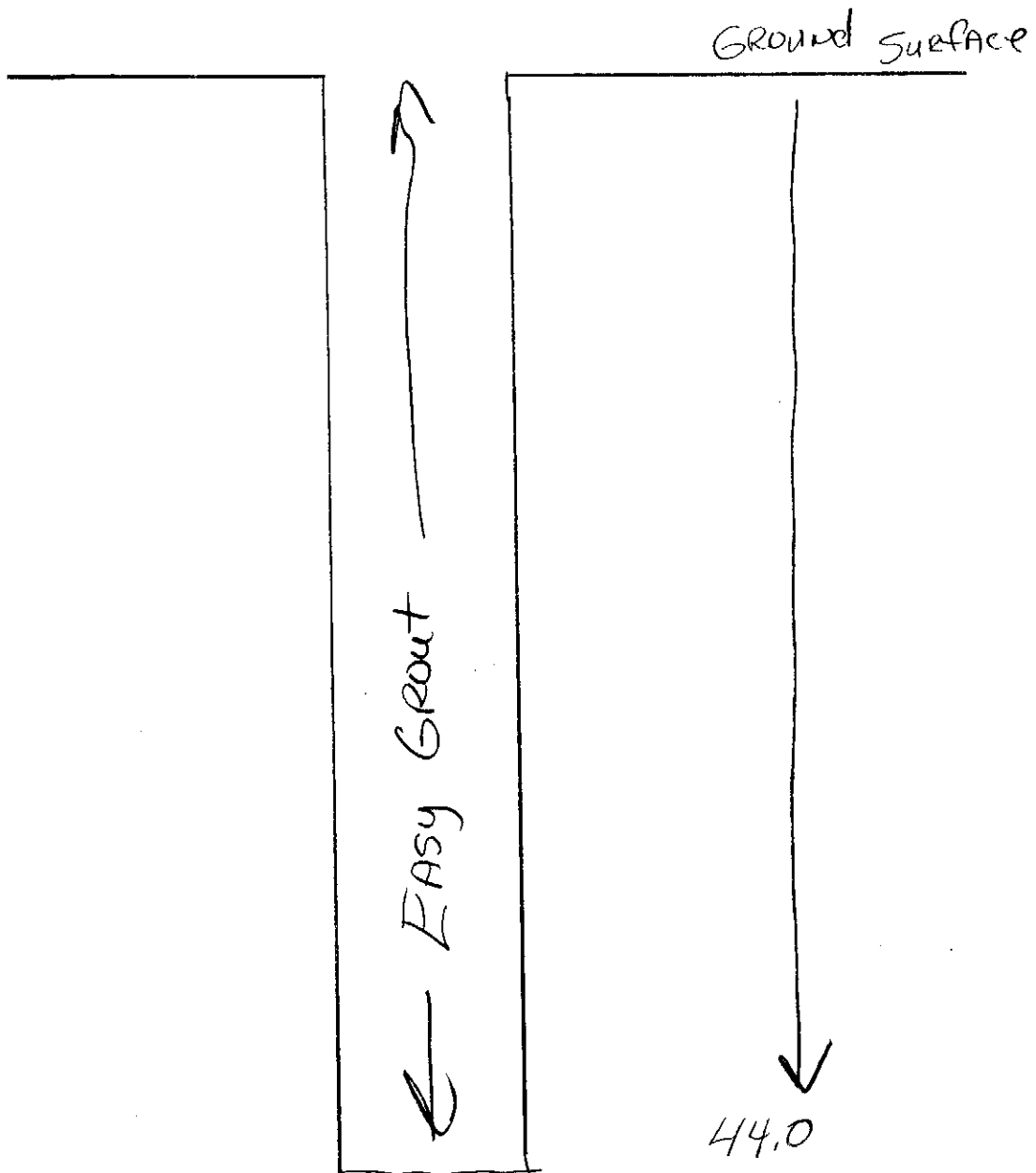
I DO HEREBY CERTIFY THAT THIS WELL WAS ABANDONED IN ACCORDANCE
WITH 15A NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF
THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

David Barron
SIGNATURE OF CERTIFIED WELL CONTRACTOR

6-6-07
DATE

SIGNATURE OF PRIVATE WELL OWNER ABANDONING THE WELL DATE
(The private well owner must be an individual who personally abandons his/her residential well
in accordance with 15A NCAC 2C .0113.)

DAVID BARRON
PRINTED NAME OF PERSON ABANDONING THE WELL





WELL ABANDONMENT RECORD

North Carolina Department of Environment and Natural Resources- Division of Water Quality

WELL CONTRACTOR CERTIFICATION #

2089

1. WELL CONTRACTOR:

DAVID BARRON

Well Contractor (Individual) Name

ENG. TECTONICS

Well Contractor Company Name

STREET ADDRESS 1720 JARGRAVE ST.

W-Salem N.C. 27107

City or Town State

Zip Code

336 724-6994

Area code - Phone number

2. WELL INFORMATION:

SITE WELL ID # (if applicable)

PZ#33

STATE WELL PERMIT # (if applicable)

COUNTY WELL PERMIT # (if applicable)

DWQ or OTHER PERMIT # (if applicable)

WELL USE (Circle applicable use): Monitoring Residential
Municipal/Public Industrial/Commercial Agricultural
Recovery Injection Irrigation
Other (list use) Water Levels

3. WELL LOCATION:

COUNTY Davidson QUADRANGLE NAME

NEAREST TOWN: Thomasville

1242 old Hwy 29 27360 N.C.

(Street/Road Name, Number, Community, Subdivision, Lot No., Parcel, Zip Code)

TOPOGRAPHIC / LAND SETTING:

Slope Valley ☒ Flat ☐ Ridge ☐ Other

(Circle appropriate setting)

LATITUDE 35 5053N

LONGITUDE 80 1108W

May be in degrees, minutes, seconds, or in a decimal format

Latitude/longitude source: ☒ GPS ☐ Topographic map

(Location of well must be shown on a USGS topo map and attached to this form if not using GPS.)

4a. FACILITY - The name of the business where the well is located. Complete 4a and 4b. (If a residential well, skip 4a; complete 4b, well owner information only.)

FACILITY ID # (if applicable)

NAME OF FACILITY DAVIDSON CO. LANDFILL

STREET ADDRESS 1242 old Hwy 29

Thomasville N.C. 27360

City or Town

State

Zip Code

4b. CONTACT PERSON/WELL OWNER:

NAME Charlie Brughwood

STREET ADDRESS 1242 old Hwy 29

Thomasville N.C. 27360

City or Town

State

Zip Code

336 242-2284

Area code - Phone number

5. WELL DETAILS:

a. Total Depth: 35.0' ft. Diameter: 2" in.

b. Water Level (Below Measuring Point): 25.32 ft.

Measuring point is ft. above land surface.

6. CASING:

Length

Diameter

a. Casing Depth (if known): 35' ft. 2" in.

b. Casing Removed: 35' ft. 2" in.

7. DISINFECTION: NA

(Amount of 65%-75% calcium hypochlorite used)

8. SEALING MATERIAL:

Neat Cement

Sand Cement

Cement lb.

Cement lb.

Water gal.

Water gal.

Bentonite

Bentonite lb.

Type: Slurry Pellets

Water gal.

Other

Type material Easy Grout

Amount 150 lbs 75 gals water

9. EXPLAIN METHOD OF EMPLACEMENT OF MATERIAL:

Over Ream well and Tremie
Grout From Bottom To Top

ALL well materials Removed

10. WELL DIAGRAM: Draw a detailed sketch of the well on the back of this form showing total depth, depth and diameter of screens (if any) remaining in the well, gravel interval, intervals of casing perforations, and depths and types of fill materials used.

11. DATE WELL ABANDONED

6-5-07

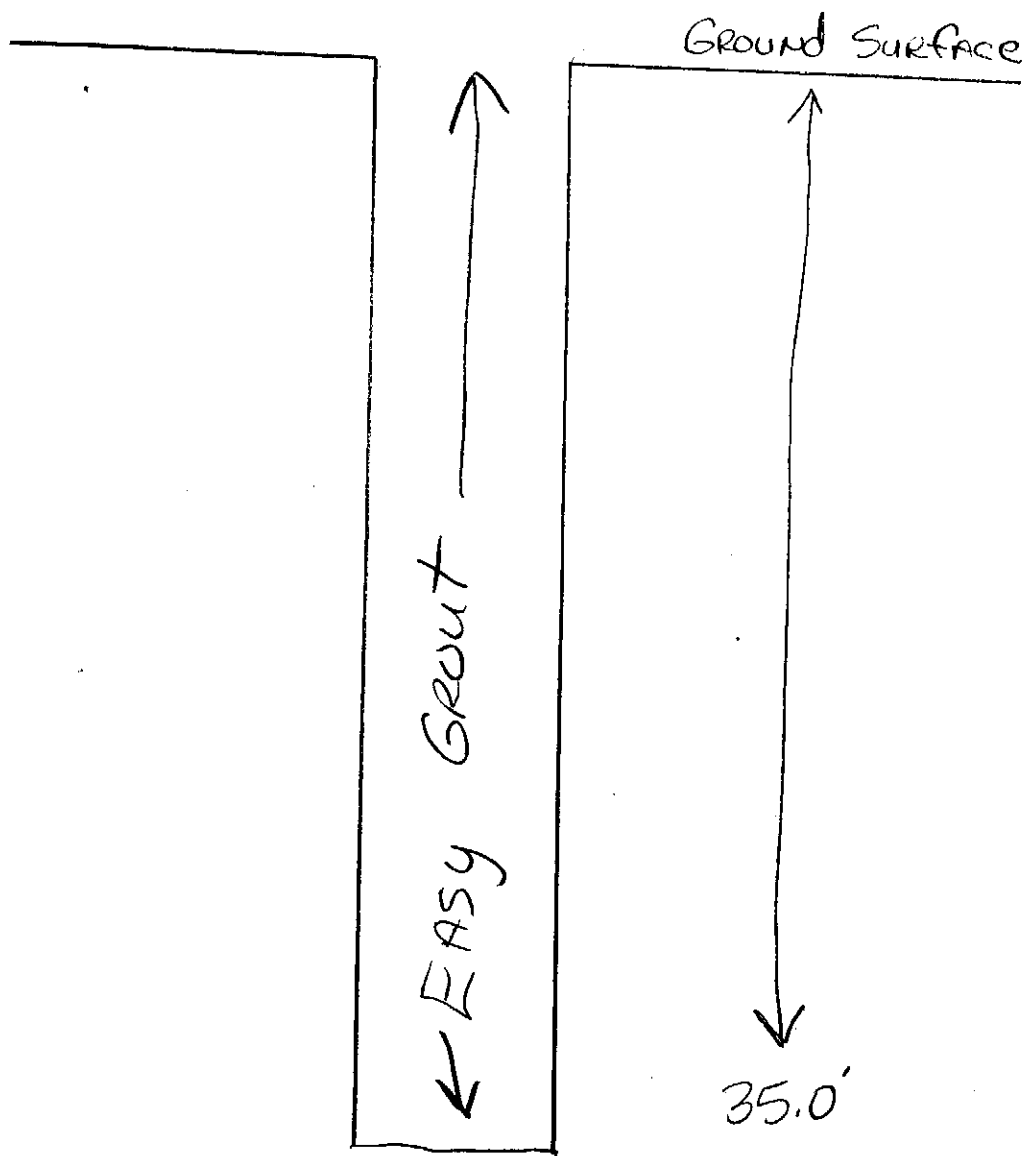
I DO HEREBY CERTIFY THAT THIS WELL WAS ABANDONED IN ACCORDANCE WITH 15A NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

David Barron
SIGNATURE OF CERTIFIED WELL CONTRACTOR

6-8-07
DATE

SIGNATURE OF PRIVATE WELL OWNER ABANDONING THE WELL DATE
(The private well owner must be an individual who personally abandons his/her residential well in accordance with 15A NCAC 2C .0113.)

DAVID BARRON
PRINTED NAME OF PERSON ABANDONING THE WELL





WELL ABANDONMENT RECORD

North Carolina Department of Environment and Natural Resources - Division of Water Quality

WELL CONTRACTOR CERTIFICATION

2089

REC'D JUN 14 2007

1. WELL CONTRACTOR:

DAVID BARRON

Well Contractor (Individual) Name

ENG. TECTONICS

Well Contractor Company Name

STREET ADDRESS 1720 JARGRAVE ST.

W-Salem N.C. 27107

City or Town State

Zip Code

336 724-6994

Area code - Phone number

2. WELL INFORMATION:

SITE WELL ID # (if applicable)

P2 34

STATE WELL PERMIT # (if applicable)

COUNTY WELL PERMIT # (if applicable)

DWQ or OTHER PERMIT # (if applicable)

WELL USE (Circle applicable use): Monitoring Residential
Municipal/Public Industrial/Commercial Agricultural
Recovery Injection Irrigation
Other (list use) WATER LEVELS

3. WELL LOCATION:

COUNTY Davidson QUADRANGLE NAME

NEAREST TOWN: ~~Thomasville~~ Thomasville
1242 Old Hwy 29 27360 N.C.

(Street/Road Name, Number, Community, Subdivision, Lot No., Parcel, Zip Code)

TOPOGRAPHIC / LAND SETTING:

Slope Valley Flat Ridge Other
(Circle appropriate setting)

LATITUDE 35 5057N

LONGITUDE 80 1109W

May be in degrees, minutes, seconds, or in a decimal format

Latitude/longitude source: GPS Topographic map
(Location of well must be shown on a USGS topo map and attached to this form if not using GPS.)

4a. FACILITY- The name of the business where the well is located. Complete 4a and 4b.
(If a residential well, skip 4a; complete 4b, well owner information only.)

FACILITY ID # (if applicable)

NAME OF FACILITY DAVIDSON CO. LANDFILL

STREET ADDRESS 1242 Old Hwy 29

Thomasville N.C. 27360

City or Town State Zip Code

4b. CONTACT PERSON/WELL OWNER:

NAME CHARLIE BRUSHWOOD

STREET ADDRESS 1242 Old Hwy 29

Thomasville N.C. 27360

City or Town State Zip Code

336 242-2284

Area code - Phone number

5. WELL DETAILS:

a. Total Depth: 33' ft. Diameter: 2" in.

b. Water Level (Below Measuring Point): 21.18 ft.

Measuring point is 2.90 ft. above land surface.

6. CASING:

Length

Diameter

a. Casing Depth (if known): 33' ft. 2" in.

b. Casing Removed: 0 ft. 2" in.

7. DISINFECTION: NA

(Amount of 65%-75% calcium hypochlorite used)

8. SEALING MATERIAL:

Neat Cement

Sand Cement

Cement _____ lb.
Water _____ gal.

Cement _____ lb.
Water _____ gal.

Bentonite

Bentonite _____ lb.
Type: Slurry _____ Pellets _____
Water _____ gal.

Other

Type material EASY GROUT
Amount 50 lbs 25 gals water

9. EXPLAIN METHOD OF EMPLACEMENT OF MATERIAL:

Tremie GROUT FROM BOTTOM
OF WELL TO TOP

10. WELL DIAGRAM: Draw a detailed sketch of the well on the back of this form showing total depth, depth and diameter of screens (if any) remaining in the well, gravel interval, intervals of casing perforations, and depths and types of fill materials used.

11. DATE WELL ABANDONED

6-5-07

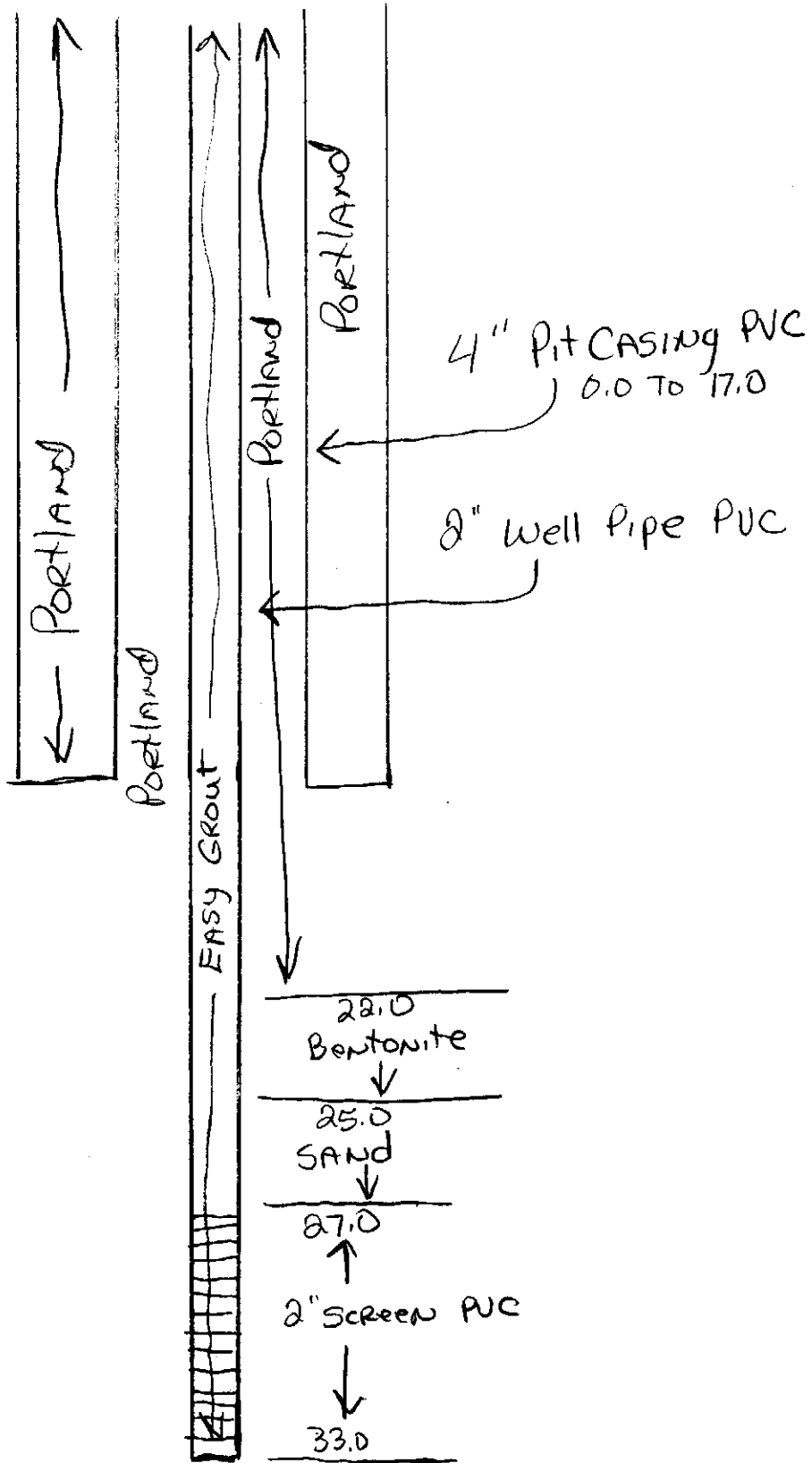
I DO HEREBY CERTIFY THAT THIS WELL WAS ABANDONED IN ACCORDANCE WITH 15A NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

David Barron
SIGNATURE OF CERTIFIED WELL CONTRACTOR

6-8-07
DATE

SIGNATURE OF PRIVATE WELL OWNER ABANDONING THE WELL DATE
(The private well owner must be an individual who personally abandons his/her residential well in accordance with 15A NCAC 2C .0113.)

DAVID BARRON
PRINTED NAME OF PERSON ABANDONING THE WELL





WELL ABANDONMENT RECORD

North Carolina Department of Environment and Natural Resources- Division of Water Quality

WELL CONTRACTOR CERTIFICATION

2089

1. WELL CONTRACTOR:

David BARRON

Well Contractor (Individual) Name

Eng. Tectonics

Well Contractor Company Name

STREET ADDRESS

1720 UARGRAVE ST.

W-Salem N.C. 27107

City or Town

State

Zip Code

(336) - 724-6994

Area code - Phone number

2. WELL INFORMATION:

SITE WELL ID # (if applicable)

PZ 43s

STATE WELL PERMIT # (if applicable)

COUNTY WELL PERMIT # (if applicable)

DWQ or OTHER PERMIT # (if applicable)

WELL USE (Circle applicable use): Monitoring Residential

Municipal/Public Industrial/Commercial

Recovery Injection Irrigation

Agricultural

Other (list use)

3. WELL LOCATION:

COUNTY Davidson QUADRANGLE NAME

NEAREST TOWN: Thomasville N.C.

1242 old Hwy 29 27360-0024

(Street/Road Name, Number, Community, Subdivision, Lot No., Parcel, Zip Code)

TOPOGRAPHIC / LAND SETTING:

Slope Valley Flat Ridge Other

(Circle appropriate setting)

LATITUDE 35° 50.50 N

LONGITUDE 80° 10.47 W

May be in degrees, minutes, seconds, or in a decimal format

Latitude/longitude source: GPS Topographic map

(Location of well must be shown on a USGS topo map and attached to this form if not using GPS.)

4a. FACILITY- The name of the business where the well is located. Complete 4a and 4b. (If a residential well, skip 4a; complete 4b, well owner information only.)

FACILITY ID # (if applicable)

NAME OF FACILITY Davidson Co. Landfill

STREET ADDRESS 1242 old Hwy 29

Thomasville N.C.

27360-0024

City or Town

State

Zip Code

4b. CONTACT PERSON/WELL OWNER:

NAME Charlie Brushwood

STREET ADDRESS 1242 old Hwy 29

Thomasville N.C.

27360-0024

City or Town

State

Zip Code

(336) - 242-2284

Area code - Phone number

5. WELL DETAILS:

a. Total Depth: 18.0 ft. Diameter: 2" in.

b. Water Level (Below Measuring Point): 12.0 ft.

Measuring point is 3.0 ft. above land surface.

6. CASING:

Length

Diameter

a. Casing Depth (if known): 18.0 ft. 2" in.

b. Casing Removed: 18.0 ft. 2" in.

7. DISINFECTION: None

(Amount of 65%-75% calcium hypochlorite used)

8. SEALING MATERIAL:

Neat Cement

Sand Cement

Cement _____ lb.

Cement _____ lb.

Water _____ gal.

Water _____ gal.

Bentonite

Bentonite _____ lb.

Type: Slurry _____ Pellets _____

Water _____ gal.

Other

Type material Shur Grout

Amount 80lbs 50 gals water

9. EXPLAIN METHOD OF EMPLACEMENT OF MATERIAL:

Over drill well To Remove All
well materials, Pump Shur Grout From
Bottom To Top

10. WELL DIAGRAM: Draw a detailed sketch of the well on the back of this form showing total depth, depth and diameter of screens (if any) remaining in the well, gravel interval, intervals of casing perforations, and depths and types of fill materials used.

11. DATE WELL ABANDONED

8-29-07

I DO HEREBY CERTIFY THAT THIS WELL WAS ABANDONED IN ACCORDANCE WITH 15A NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

David Barron

8-29-07

SIGNATURE OF CERTIFIED WELL CONTRACTOR

DATE

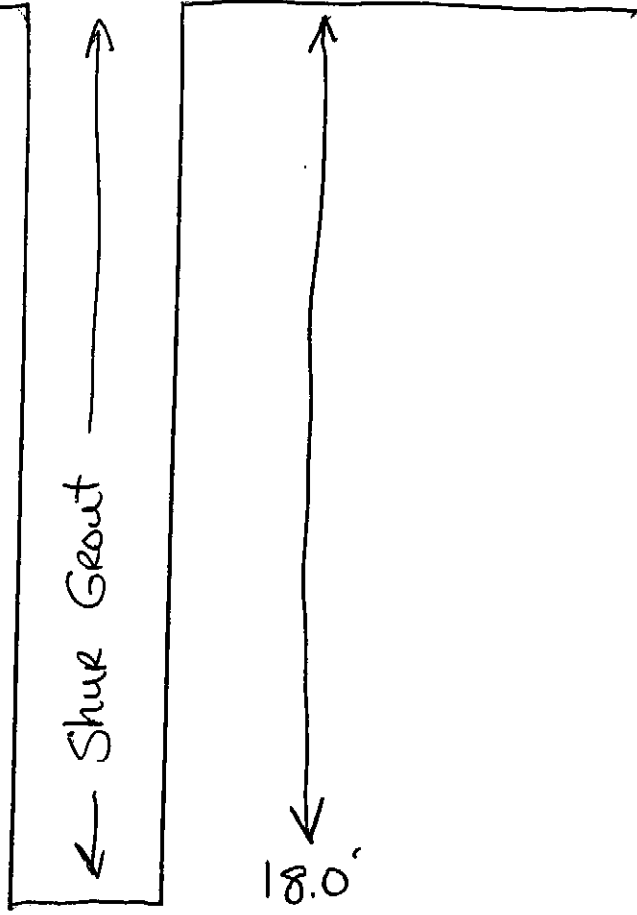
SIGNATURE OF PRIVATE WELL OWNER ABANDONING THE WELL DATE

(The private well owner must be an individual who personally abandons his/her residential well in accordance with 15A NCAC 2C .0113.)

DAVID BARRON

PRINTED NAME OF PERSON ABANDONING THE WELL

ALL well materials Removed





WELL ABANDONMENT RECORD

North Carolina Department of Environment and Natural Resources- Division of Water Quality

WELL CONTRACTOR CERTIFICATION #

2089

WELL CONTRACTOR:

David BARRON

Well Contractor (Individual) Name

Eng. Tectonics

Well Contractor Company Name

STREET ADDRESS

1720 UARGRAVE ST.

W-Salem N.C. 27107

City or Town

State

Zip Code

(336) - 724-6994

Area code - Phone number

2. WELL INFORMATION:

SITE WELL ID # (if applicable)

P2 43d

STATE WELL PERMIT # (if applicable)

COUNTY WELL PERMIT # (if applicable)

DWQ or OTHER PERMIT # (if applicable)

WELL USE (Circle applicable use): Monitoring Residential

Municipal/Public Industrial/Commercial

Recovery Injection Irrigation

Other (list use)

3. WELL LOCATION:

COUNTY DAVIDSON QUADRANGLE NAME

NEAREST TOWN: Thomasville N.C.

1242 old Hwy 29 27360-0024

(Street/Road Name, Number, Community, Subdivision, Lot No., Parcel, Zip Code)

TOPOGRAPHIC / LAND SETTING:

Slope Valley Flat Ridge Other

(Circle appropriate setting)

LATITUDE

35° 50.50N

May be in degrees, minutes, seconds, or in a decimal format

LONGITUDE

80° 10.47W

Latitude/longitude source: GPS Topographic map

(Location of well must be shown on a USGS topo map and attached to this form if not using GPS.)

4a. FACILITY- The name of the business where the well is located. Complete 4a and 4b. (If a residential well, skip 4a; complete 4b, well owner information only.)

FACILITY ID # (if applicable)

NAME OF FACILITY Davidson Co. Landfill

STREET ADDRESS 1242 old Hwy 29

Thomasville N.C.

27360-0024

City or Town

State

Zip Code

4b. CONTACT PERSON/WELL OWNER:

NAME Charlie Brushwood

STREET ADDRESS 1242 old Hwy 29

Thomasville N.C.

27360-0024

City or Town

State

Zip Code

(336) - 242-2284

Area code - Phone number

5. WELL DETAILS:

a. Total Depth: 31.0 ft. Diameter: 2" in.

b. Water Level (Below Measuring Point): 12.0 ft.

Measuring point is 3.0 ft. above land surface.

6. CASING:

20' - 4" casing

Length

Diameter

a. Casing Depth (if known):

31.0 ft.

2" in.

b. Casing Removed:

3' ft.

2" in.

7. DISINFECTION: None

(Amount of 65%-75% calcium hypochlorite used)

8. SEALING MATERIAL:

Neat Cement

Cement _____ lb.

Water _____ gal.

Sand Cement

Cement _____ lb.

Water _____ gal.

Bentonite

Bentonite _____ lb.

Type: Slurry _____ Pellets _____

Water _____ gal.

Other

Type material

Shur Grout

Amount

40 lbs

25 gals water

9. EXPLAIN METHOD OF EMPLACEMENT OF MATERIAL:

Pump Shur grout From Bottom of well to top

10. WELL DIAGRAM: Draw a detailed sketch of the well on the back of this form showing total depth, depth and diameter of screens (if any) remaining in the well, gravel interval, intervals of casing perforations, and depths and types of fill materials used.

11. DATE WELL ABANDONED

8-29-07

I DO HEREBY CERTIFY THAT THIS WELL WAS ABANDONED IN ACCORDANCE WITH 15A NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

David Barron

8-29-07

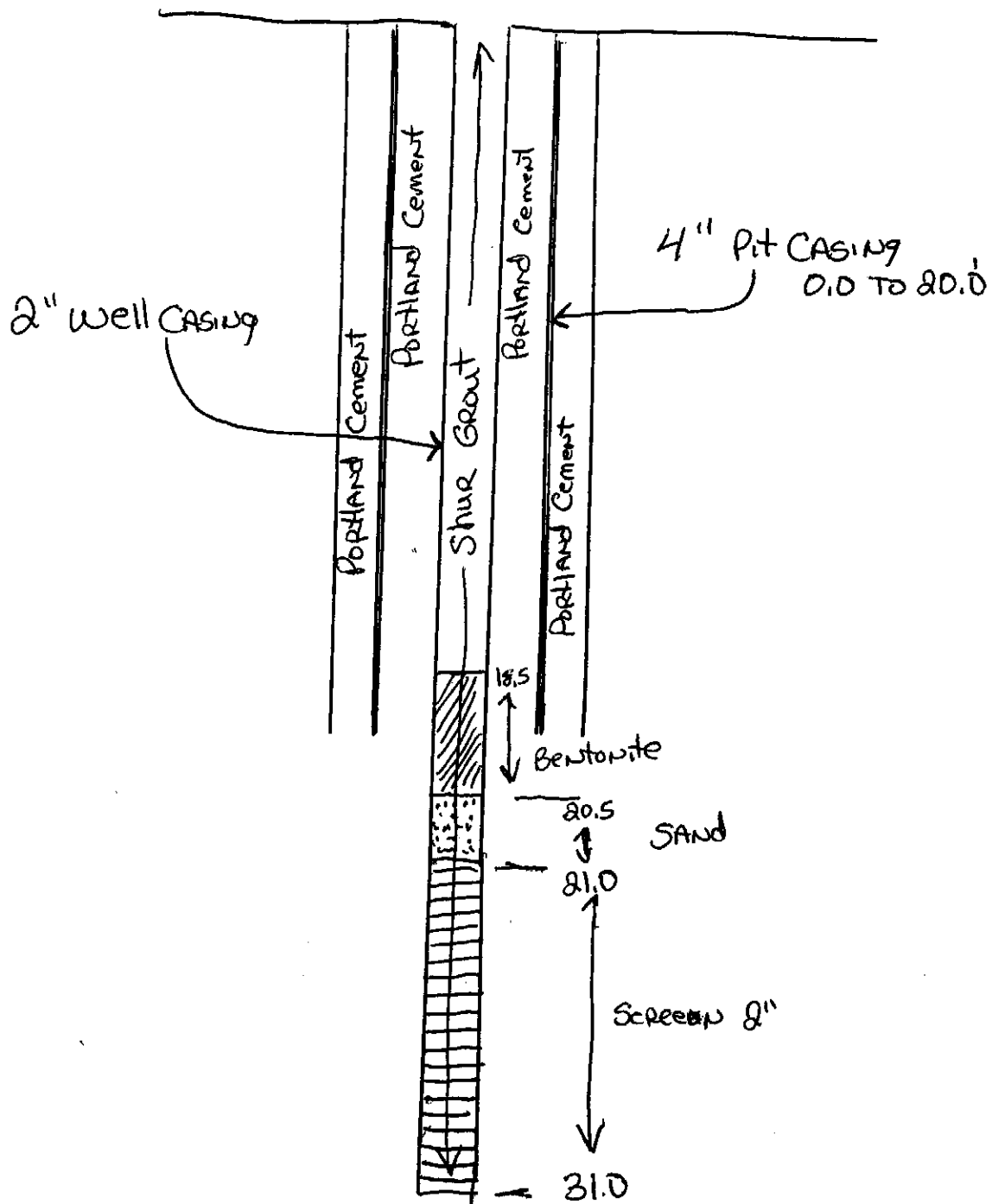
SIGNATURE OF CERTIFIED WELL CONTRACTOR

DATE

SIGNATURE OF PRIVATE WELL OWNER ABANDONING THE WELL DATE
(The private well owner must be an individual who personally abandons his/her residential well in accordance with 15A NCAC 2C .0113.)

David Barron

PRINTED NAME OF PERSON ABANDONING THE WELL



Photos

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Davidson County Phase 2 Area 1 Landfill
Geologic Certification Photographs
June 13, 2008

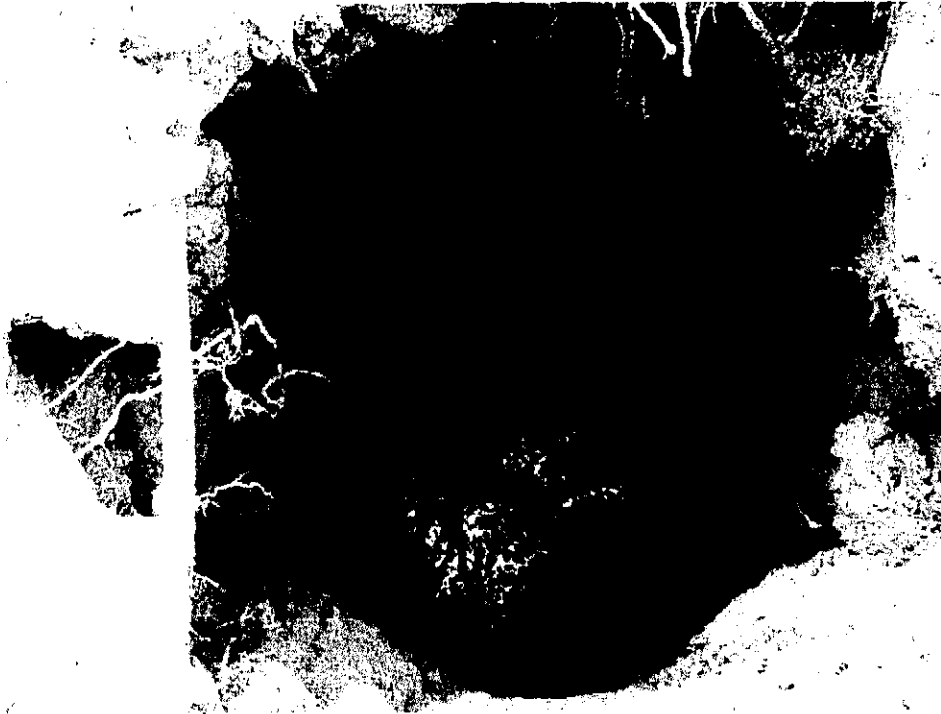


Photo 1: Hand dug well after abandonment by emplacement of grout by cement mixer to elevation of final subgrade.

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Monitoring Well Boring Logs
(MW-1, MW-3s, MW-3d, MW-4s, MW-4d, MW-5,
MW-6s, MW-6d, MW-7, MW-8)

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**Richardson Smith Gardner and Assoc**

14 North Boylan Avenue, Raleigh NC 27603

(919) 828-0577

FIELD BOREHOLE LOG

BOREHOLE NUMBER

MW-1

Page 1 of 1

PROJECT NAME: **Davidson County Landfill**
LOCATION: **Davidson County**
DRILLING CO: **Engineering Tectonics, P.A.**

DRILLING METHOD: **HSA**FIELD PARTY: **David Barron**GEOLOGIST: **Clark Wipfield**DATE BEGUN: **3/25/08** DATE COMPLETED: **3/25/08**TOTAL DEPTH: **20 ft.**

GROUND SURFACE ELEVATION:

TOP OF CASING ELEVATION:

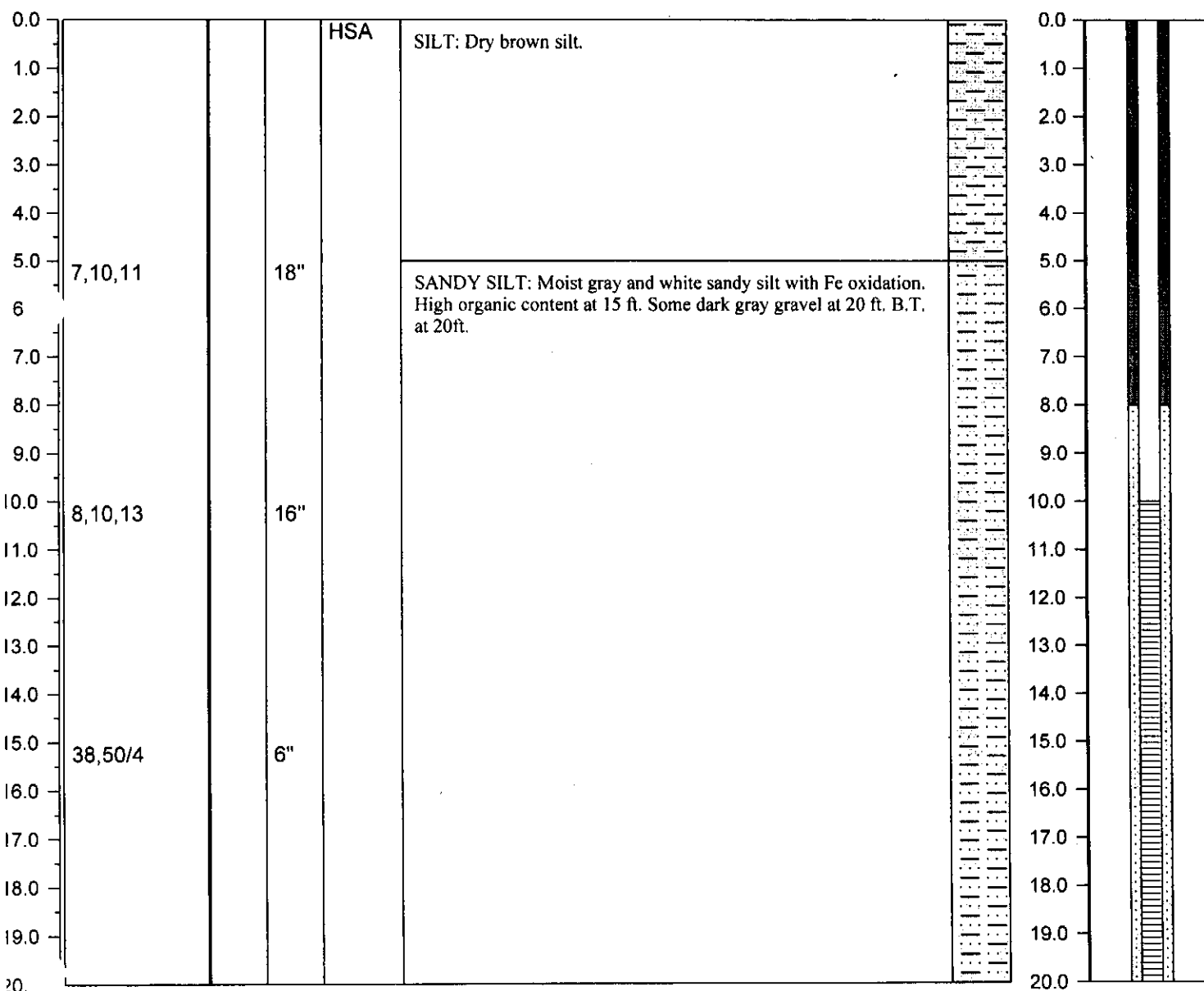
STATIC WATER LEVEL (TOC)

Depth (ft)

Time

Date

DEPTH	BLOW COUNT	SAMPLING METHOD	RECOVERY	DRILL METHOD	DESCRIPTION	LITHOLOGY	DEPTH	WELL	INSTALLATION
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**Richardson Smith Gardner and Assoc**

14 North Boylan Avenue, Raleigh NC 27603

(919) 828-0577

FIELD BOREHOLE LOG

BOREHOLE NUMBER

MW-3s

Page 1 of 1

PROJECT NAME: **Davidson County**
LOCATION: **Davidson County Landfill**
DRILLING CO: **Engineering Tectonics, P.A.**

DRILLING METHOD: **HSA**
FIELD PARTY: **David Barron**
GEOLOGIST: **Clark Wipfield**

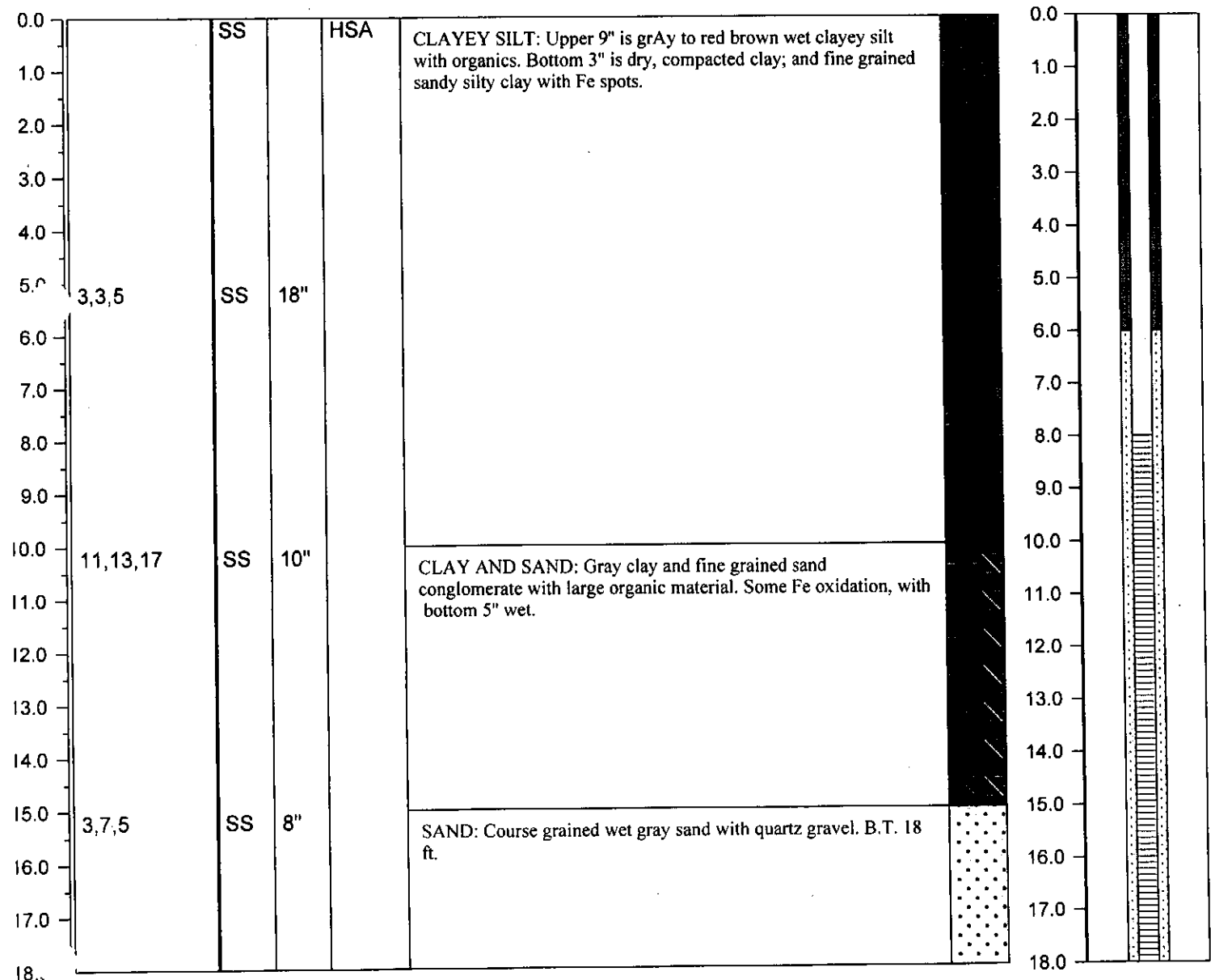
DATE BEGUN: 3/24/08 DATE COMPLETED: 3/24/08

TOTAL DEPTH: **18 ft.**
GROUND SURFACE ELEVATION:
TOP OF CASING ELEVATION:

STATIC WATER LEVEL (TOC)

Depth (ft)	6.21
Time	1:10pm
Date	3/27/08

DEPTH	BLOW COUNT	SAMPLING METHOD	RECOVERY	DRILL METHOD	DESCRIPTION	LITHOLOGY	DEPTH	WELL	INSTALLATION
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Richardson Smith Gardner and Assoc

14 North Boylan Avenue, Raleigh NC 27603

(919) 828-0577

FIELD BOREHOLE LOG

BOREHOLE NUMBER

MW-3D

Page 1 of 1

PROJECT NAME: Davidson County Landfill

LOCATION: Davidson County

DRAWING CO: Engineering Tectonics, P.A.

DRILLING METHOD: HSA

FIELD PARTY: David Barron

GEOLOGIST: Clark Wipfield

DATE BEGUN: 3/26/08 DATE COMPLETED: 3/26/08

TOTAL DEPTH: 40.5 ft.

GROUND SURFACE ELEVATION:

TOP OF CASING ELEVATION:

STATIC WATER LEVEL (TOC)

Depth (ft)

Time

Date

DEPTH	BLOW COUNT	SAMPLING METHOD	RECOVERY	DRILL METHOD	DESCRIPTION	LITHOLOGY	DEPTH	WELL	INSTALLATION
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0.0				HSA	CLAYEY SAND: Upper 9" is gray to red brown wet clayey silt with organics. Bottom 3" is dry compacted clay with fine grained sandy silty clay with Fe spots.		0.0		
1.0							1.0		
2.0							2.0		
3.0							3.0		
4.0							4.0		
5.0	3,3,5	SS	18"				5.0		
6.0							6.0		
7.0							7.0		
8.0							8.0		
9.0							9.0		
10.0	11,13,17	SS	10"		CLAY AND SAND: Gray clay and fine grained sand conglomerate, with large organic material. Some Fe oxidation with bottom 5" wet.		10.0		
11.0							11.0		
12.0							12.0		
13.0							13.0		
14.0							14.0		
15.0	3,7,5	SS	8"		SAND: Course grained wet gray sand with quartz gravel.		15.0		
16.0							16.0		
17.0							17.0		
18.0							18.0		
19.0							19.0		
20.0	50/3	SS	4"		SANDY SILT: Wet course grained sticky gray sandy silt. A.R. 24 ft.		20.0		
21.0							21.0		
22.0							22.0		
23.0							23.0		
24.0				AH	GRANITE: Weathered boulder.		24.0		
25.0		SS					25.0		
26.0							26.0		
27.0							27.0		
28.0							28.0		
29.0					SAND: 6" thick fine to coarse sand layer.		29.0		
30.0		Grab					30.0		
31.0					GRANITE: Weathered granite, wet. B.T. 40.5 ft.		31.0		
32.0							32.0		
33.0							33.0		
34.0							34.0		
35.0		Grab					35.0		
36.0							36.0		
37.0							37.0		
38.0							38.0		
39.0							39.0		
40.0		Grab					40.0		

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**Richardson Smith Gardner and Assoc**

14 North Boylan Avenue, Raleigh NC 27603

(919) 828-0577

FIELD BOREHOLE LOG

BOREHOLE NUMBER

MW-4s

Page 1 of 1

PROJECT NAME: **Davidson County**
LOCATION: **Davidson County Landfill**
CONSULTING CO: **Engineering Tectonics, P.A.**

DRILLING METHOD: **HSA**
FIELD PARTY: **David Barron**
GEOLOGIST: **Clark Wipfield**

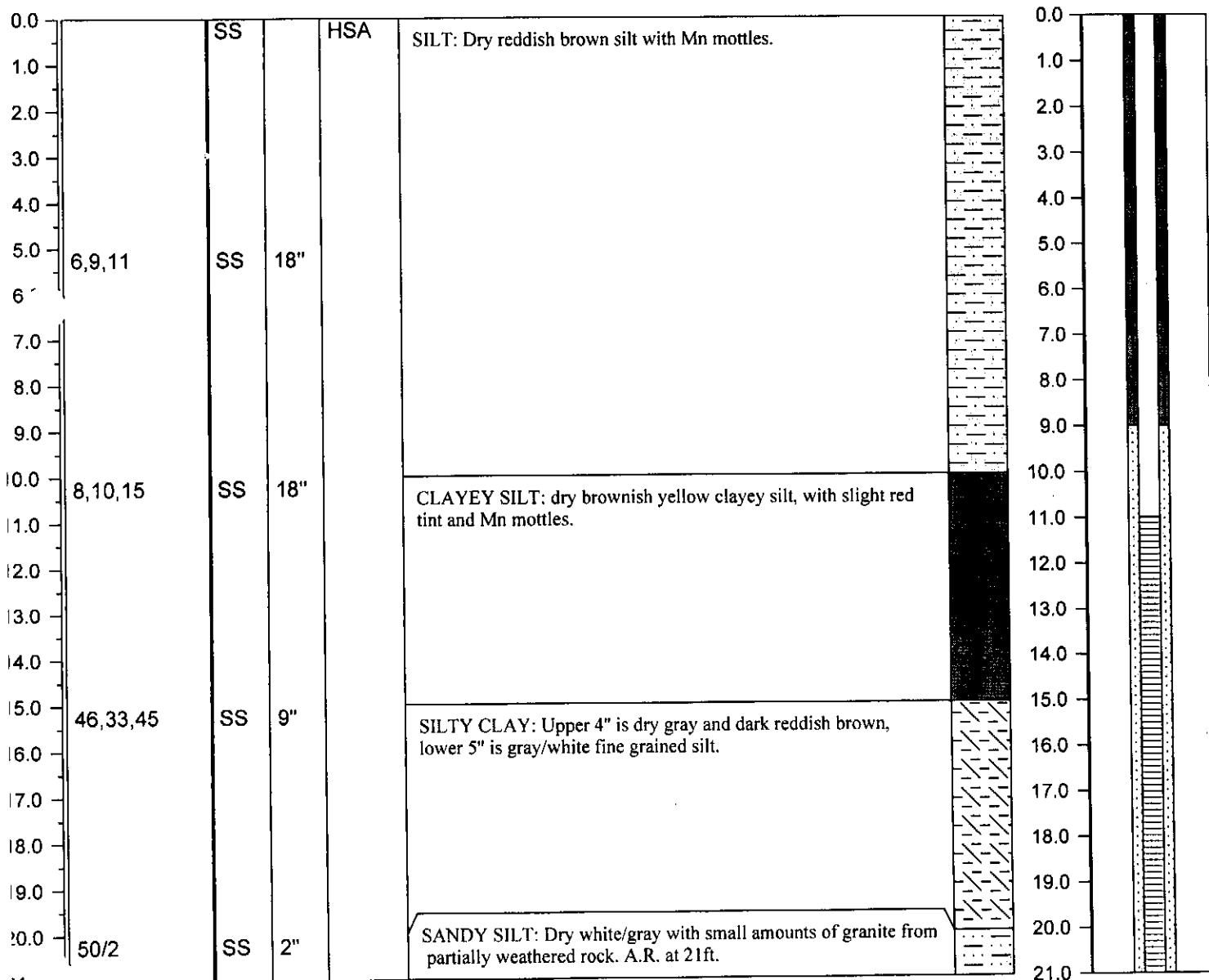
DATE BEGUN: 3/24/08 DATE COMPLETED: 3/24/08

TOTAL DEPTH: **21**
GROUND SURFACE ELEVATION:
TOP OF CASING ELEVATION:

STATIC WATER LEVEL (TOC)

Depth (ft)	18.97
Time	1:30pm
Date	3/27/08

DEPTH	BLOW COUNT	SAMPLING METHOD	RECOVERY	DRILL METHOD	DESCRIPTION	LITHOLOGY	DEPTH	WELL	INSTALLATION
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**Richardson Smith Gardner and Assoc**

14 North Boylan Avenue, Raleigh NC 27603

(919) 828-0577

FIELD BOREHOLE LOG

BOREHOLE NUMBER

MW-4D

Page 1 of 1

PROJECT NAME: **Davidson County**
 LOCATION: **Davidson County Landfill**
 DRILLING CO: **Engineering Tectonics, P.A.**

DRILLING METHOD: **HSA and AH**
 FIELD PARTY: **David Barron**
 GEOLOGIST: **Clark Wipfield**

DATE BEGUN: **3/26/08** DATE COMPLETED: **3/26/08**

TOTAL DEPTH: **37 ft.**
 GROUND SURFACE ELEVATION:
 TOP OF CASING ELEVATION:

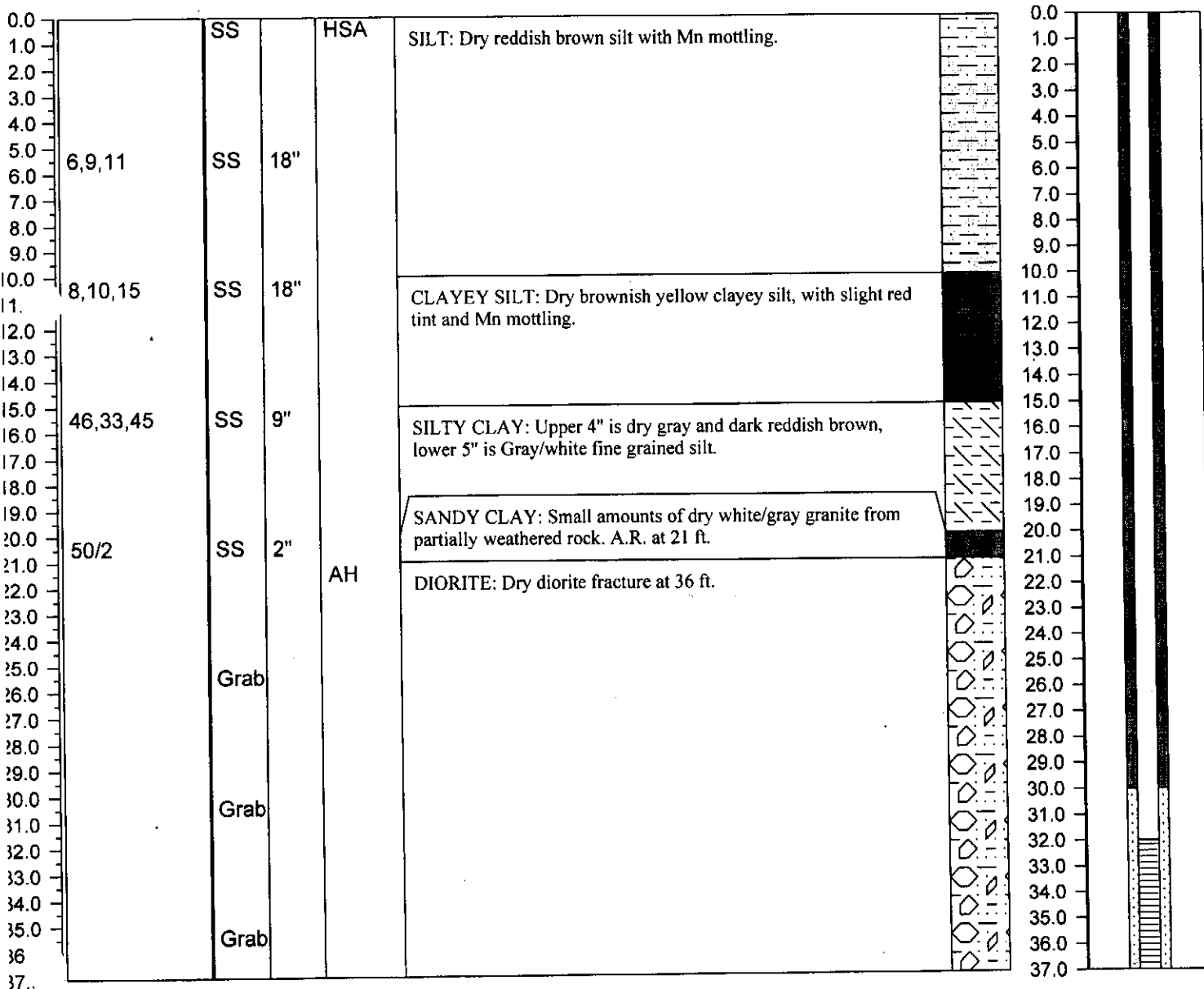
STATIC WATER LEVEL (TOC)

Depth (ft)

Time

Date

DEPTH	BLOW COUNT	SAMPLING METHOD	RECOVERY	DRILL METHOD	DESCRIPTION	LITHOLOGY	DEPTH	WELL INSTALLATION
-------	------------	-----------------	----------	--------------	-------------	-----------	-------	-------------------



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**Richardson Smith Gardner and Assoc**

14 North Boylan Avenue, Raleigh NC 27603

(919) 828-0577

FIELD BOREHOLE LOG

BOREHOLE NUMBER

MW-5

Page 1 of 1

PROJECT NAME: **Davidson County**
 LOCATION: **Davidson County Landfill**
 DRILLING CO: **Engineering Tectonics, P.A.**

TOTAL DEPTH: **38 ft.**
 GROUND SURFACE ELEVATION:
 TOP OF CASING ELEVATION:

DRILLING METHOD: **HSA**FIELD PARTY: **David Barron**GEOLOGIST: **Clark Wipfield**DATE BEGUN: **3/24/08** DATE COMPLETED: **3/24/08****STATIC WATER LEVEL (TOC)**Depth (ft) **27.77**Time **1:40pm**Date **3/27/08**

DEPTH	BLOW COUNT	SAMPLING METHOD	RECOVERY	DRILL METHOD	DESCRIPTION	LITHOLOGY	DEPTH	WELL INSTALLATION
-------	------------	-----------------	----------	--------------	-------------	-----------	-------	-------------------

0.0		SS	18"	HSA	SILTY CLAY: Dry red silty clay		0.0	
1.0							1.0	
2.0							2.0	
3.0							3.0	
4.0							4.0	
5.0	3,9,7	SS	14"				5.0	
6.0							6.0	
7.0							7.0	
8.0							8.0	
9.0							9.0	
10.0	6,9,14	SS	17"		CLAY AND SAND: Upper 4" red clay, middle 8" white and brown fine grained sand with organics, bottom 5" white/ gray clay silt.		10.0	
11.0							11.0	
12.0							12.0	
13.0							13.0	
14.0							14.0	
15.0	4,4,7	SS	14"		CLAYEY SILT: Moist white and gray clayey silt with Fe oxidation incremental banding from 45 degrees to parallel respectively. Brown sand observed at 36 ft. B.T. at 38 ft.		15.0	
16.0							16.0	
17.0							17.0	
18.0							18.0	
19.0							19.0	
20.0	5,10,15	SS	16"				20.0	
21.0							21.0	
22.0							22.0	
23.0							23.0	
24.0							24.0	
25.0	13,20,27	SS	10"				25.0	
26.0							26.0	
27.0							27.0	
28.0							28.0	
29.0							29.0	
30.0	9,17,27	SS	12"				30.0	
31.0							31.0	
32.0							32.0	
33.0							33.0	
34.0							34.0	
35.0	27,26,50/6	SS	14"				35.0	
36.0							36.0	
37							37.0	
38							38.0	

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14' North Boylan Avenue, Raleigh NC 27603

(919) 828-0577

FIELD BOREHOLE LOG

BOREHOLE NUMBER

MW-6s

Page 1 of 1

PROJECT NAME: **Davidson County**
 LOCATION: **Davidson County Landfill**
 DRILLING CO: **Engineering Tectonics, P.A.**

TOTAL DEPTH: **40 ft.**
 GROUND SURFACE ELEVATION:
 TOP OF CASING ELEVATION:

DRILLING METHOD: **HSA**FIELD PARTY: **David Barron**GEOLOGIST: **Clark Wipfield**DATE BEGUN: **3/25/08** DATE COMPLETED: **3/25/08****STATIC WATER LEVEL (TOC)**Depth (ft) **33.60**Time **2:00pm**Date **3/27/08**

DEPTH	BLOW COUNT	SAMPLING METHOD	RECOVERY	DRILL METHOD	DESCRIPTION	LITHOLOGY	DEPTH	WELL INSTALLATION
-------	------------	-----------------	----------	--------------	-------------	-----------	-------	-------------------

0.0				HSA	SANDY SILT: Brownish fine grained yellow sandy silt with Mn spots in upper 10". Lower portion is white/ gray compacted fine grained sand with silt quartz fragments, increase in size with depth. Increased percent of Fe banding and oxidation with depth.		0.0	
1.0							1.0	
2.0							2.0	
3.0							3.0	
4.0							4.0	
5.0	28,37,50/1	SS	13"				5.0	
6.0							6.0	
7.0							7.0	
8.0							8.0	
9.0							9.0	
10.0	20,36,31	SS	17"				10.0	
11.0							11.0	
12.0							12.0	
13.0							13.0	
14.0							14.0	
15.0	23,36,50/6	SS	14"				15.0	
16.0							16.0	
17.0							17.0	
18.0							18.0	
19.0							19.0	
20.0	32,44,50/5	SS	18"				20.0	
21.0							21.0	
22.0							22.0	
23.0							23.0	
24.0							24.0	
25.0	50/5	SS	18"		SILT: Upper 14" is sticky wet viscous silt with Fe oxidation. Lower 4" hard compact gray/white silt.		25.0	
26.0							26.0	
27.0							27.0	
28.0							28.0	
29.0							29.0	
30.0	29,32,50/4	SS	12"		SANDY SILT: Moist brownish yellow sandy silt, with Fe oxidation and quartz bands at 45 degree angles.		30.0	
31.0							31.0	
32.0							32.0	
33.0							33.0	
34.0							34.0	
35.0	28,50/5	SS	10"		GRAVEL AND SAND: Moist brownish yellow sandy silt, with Fe oxidation and quartz banks at 45 degree angles.		35.0	
36.0							36.0	
37.0							37.0	
38.0							38.0	
39.0							39.0	
40.0	42,50/6	SS	5"		SANDY SILT: Upper 2" is wet silty gray sand. Bottom 3" is dry white & gray sandy silt, with black and Fe oxidation spots. B.T. at 40 ft.		40.0	
41.0							41.0	

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FIELD BOREHOLE LOG

BOREHOLE NUMBER

MW-6D

Page 1 of 2

PROJECT NAME: **Davidson County Landfill**
LOCATION: **Davidson County**
CONSULTING CO: **Engineering Tectonics, P.A.**

DRILLING METHOD: HSA and AH

FIELD PARTY: **David Barron**

GEOLOGIST: **Clark Wipfield**

DATE BEGUN: 3/27/08 DATE COMPLETED: 3/27/08

TOTAL DEPTH: 70.5 ft.

GROUND SURFACE ELEVATION:

TOP OF CASING ELEVATION:

STATIC WATER LEVEL (TOC)

Depth (ft)

Time

Date _____

[illegible]



FIELD BOREHOLE LOG

BOREHOLE NUMBER

MW-6D

Page 2 of 2

PROJECT NAME: **Davidson County Landfill**

LOCATION: **Davidson County**

DRAWING CO: **Engineering Tectonics, P.A.**

DRILLING METHOD: **HSA and AH**

FIELD PARTY: **David Barron**

GEOLOGIST: **Clark Wipfield**

DATE BEGUN: **3/27/08** DATE COMPLETED: **3/27/08**

TOTAL DEPTH: **70.5 ft.**

GROUND SURFACE ELEVATION:

TOP OF CASING ELEVATION:

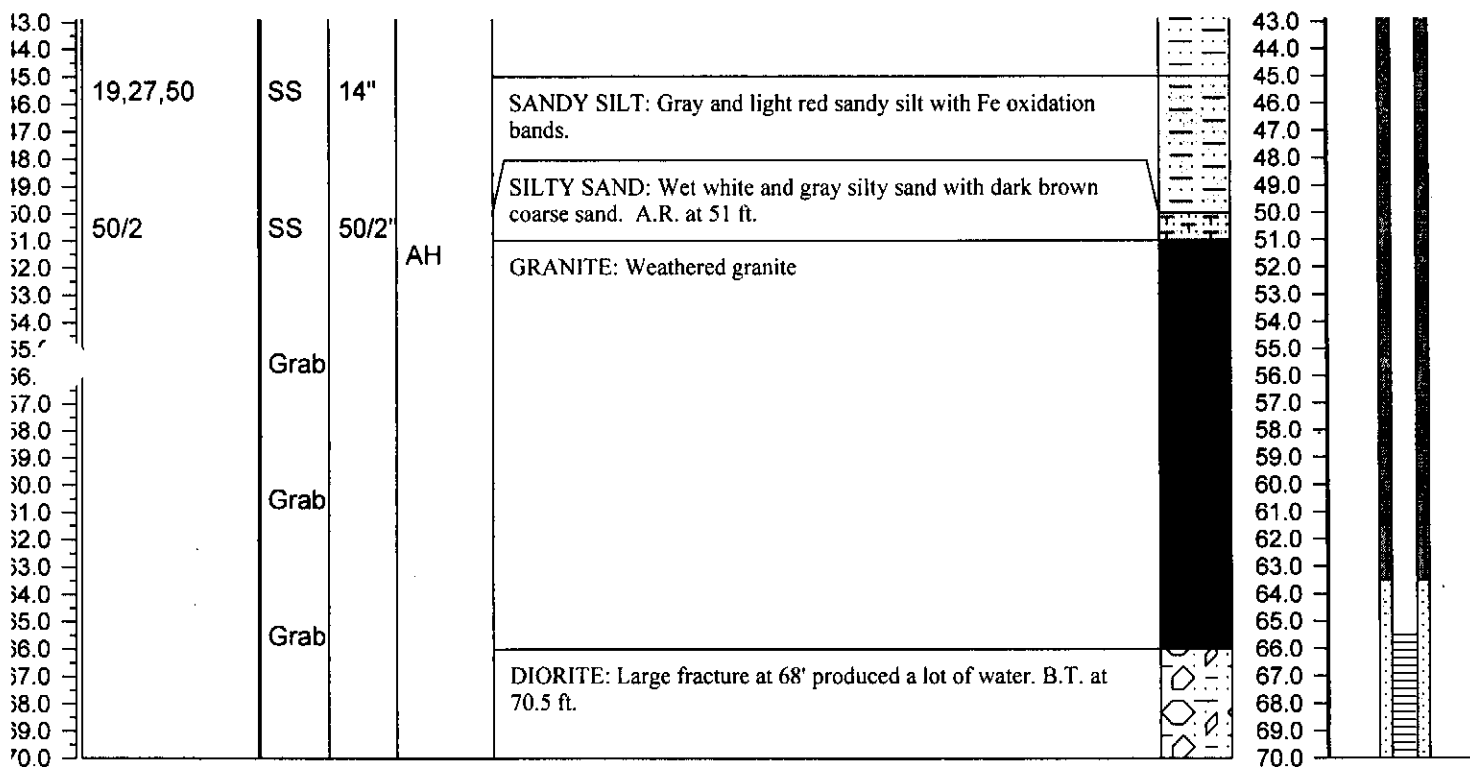
STATIC WATER LEVEL (TOC)

Depth (ft)

Time

Date

DEPTH	BLOW COUNT	SAMPLING METHOD	RECOVERY	DRILL METHOD	DESCRIPTION	LITHOLOGY	DEPTH	WELL	INSTALLATION
-------	------------	-----------------	----------	--------------	-------------	-----------	-------	------	--------------



**Richardson Smith Gardner and Assoc**

14 North Boylan Avenue, Raleigh NC 27603

(919) 828-0577

FIELD BOREHOLE LOG

BOREHOLE NUMBER

MW-7

Page 1 of 1

PROJECT NAME: **Davidson County Landfill**LOCATION: **Holy Springs, NC**DRILLING CO: **Engineering Tectonics, P.A.**DRILLING METHOD: **HSA and AH**FIELD PARTY: **David Barron**GEOLOGIST: **Clark Wipfield**DATE BEGUN: **3/24/08** DATE COMPLETED: **3/25/08**TOTAL DEPTH: **37.4**

GROUND SURFACE ELEVATION:

TOP OF CASING ELEVATION:

STATIC WATER LEVEL (TOC)

Depth (ft)

Time

Date

DEPTH	BLOW COUNT	SAMPLING METHOD	RECOVERY	DRILL METHOD	DESCRIPTION	LITHOLOGY	DEPTH	WELL	INSTALLATION
0.0				HSA	SANDY SILT: Dry white and gray compacted sandy silt with Fe oxidation. Minor gravel fragments with depth. A.R. at 18 ft.		0.0		
1.0							1.0		
2.0							2.0		
3.0							3.0		
4.0							4.0		
5.0	13,23,31	SS	18"				5.0		
6.0					DIORITE: Very competent diorite. B.T. at 37.4 ft.		6.0		
7.0							7.0		
8.0							8.0		
9.0							9.0		
10.0	23,50/6	SS	12"				10.0		
11.0							11.0		
12.0							12.0		
13.0							13.0		
14.0							14.0		
15.0	16,23,34	SS	18"				15.0		
16.0							16.0		
17.0							17.0		
18.0		Grab		AH			18.0		
19.0							19.0		
20.0							20.0		
21.0							21.0		
22.0		Grab					22.0		
23.0							23.0		
24.0							24.0		
25.0							25.0		
26.0							26.0		
27.0		Grab					27.0		
28.0							28.0		
29.0							29.0		
30.0							30.0		
31.0							31.0		
32.0		Grab					32.0		
33.0							33.0		
34.0							34.0		
35.0							35.0		
36.0							36.0		
37.0		Grab					37.0		

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**Richardson Smith Gardner and Assoc**

14 North Boylan Avenue, Raleigh NC 27603

(919) 828-0577

FIELD BOREHOLE LOG

BOREHOLE NUMBER

MW-8

Page 1 of 2

PROJECT NAME: Davidson County Landfill

LOCATION: Davidson County

DRILLING CO: Engineering Tectonics, P.A.

DRILLING METHOD: HSA and AH

FIELD PARTY: David Barron

GEOLOGIST: Clark Wipfield

DATE BEGUN: 3/24/08 DATE COMPLETED: 3/25/08

TOTAL DEPTH: 58.6

GROUND SURFACE ELEVATION:

TOP OF CASING ELEVATION:

STATIC WATER LEVEL (TOC)

Depth (ft) 46.58

Time 10:45am

Date 4/3/08

DEPTH	BLOW COUNT	SAMPLING METHOD	RECOVERY	DRILL METHOD	DESCRIPTION	LITHOLOGY	DEPTH	WELL INSTALLATION
-------	------------	-----------------	----------	--------------	-------------	-----------	-------	-------------------

0.0				HSA	SANDY SILTY CLAY: Dry light brown sandy silty clay with 1" bands at 45 degrees in white/gray sandy silt. Minor amounts of Fe oxidation		0.0	
1.0							1.0	
2.0							2.0	
3.0							3.0	
4.0							4.0	
5.0	13,5,6	SS	16"				5.0	
6.0					SILTY CLAY: Dry light brown silty clay bands (horizontal) in white/gray fined grained sandy silt		6.0	
7.0							7.0	
8.0							8.0	
9.0							9.0	
10.0	8,9,13	SS	17"				10.0	
11.0							11.0	
12.0							12.0	
13.0							13.0	
14.0							14.0	
15.0	11,14,17	SS	18"				15.0	
16.0							16.0	
17.0							17.0	
18.0							18.0	
19.0							19.0	
20.0	14,18,28	SS	17"				20.0	
21.0					SILTY CLAY: Yellow silt in silty sand that is white/gray with Mn mottles. A.R. at 31 ft.		21.0	
22.0							22.0	
23.0							23.0	
24.0							24.0	
25.0	15,18,22	SS	18"				25.0	
26.0							26.0	
27.0							27.0	
28.0							28.0	
29.0							29.0	
30.0	50/1	SS	2"	AH			30.0	
31.0					DIORITE: Competent diorite. B.T. at 58.6 ft.		31.0	
32.0							32.0	
33.0							33.0	
34.0							34.0	
35.0		Grab					35.0	
36.0							36.0	
37.0							37.0	
38.0							38.0	
39.0							39.0	
40.0		Grab					40.0	
41.0							41.0	
42.0							42.0	
43.0							43.0	

PROJECT NAME: Davidson County Landfill
LOCATION: Davidson County
DRILLING CO: Engineering Tectonics, P.A.
DRILLING METHOD: HSA and AH
FIELD PARTY: David Barron
GEOLOGIST: Clark Wipfield
DATE BEGUN: 3/24/08 DATE COMPLETED: 3/24/08

TOTAL DEPTH: 58.6

GROUND SURFACE ELEVATION:

TOP OF CASING ELEVATION:

STATIC WATER LEVEL (TOC)

Depth (ft)	46.58
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Time	10:45am
------	---------

Date	4/3/08
------	--------

DEPTH	BLOW COUNT	SAMPLING METHOD	RECOVERY	DRILL METHOD	DESCRIPTION	LITHOLOGY	DEPTH	WELL	INSTALLATION
13.0		Grab					43.0		
14.0							44.0		
15.0							45.0		
16.0							46.0		
17.0							47.0		
18.0							48.0		
19.0							49.0		
20.0		Grab					50.0		
21.0							51.0		
22.0							52.0		
23.0							53.0		
24.0							54.0		
25							55.0		
26		Grab					56.0		
27.0							57.0		
28.0							58.0		

Appendix E

CQA Meeting Minutes

**Construction Quality Assurance Report
Davidson County MSW Landfill - Phase 2 Area 1
Davidson County, North Carolina**

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MEMORANDUM

TO: Distribution

FROM: Pieter K. Scheer, P.E.
Richardson Smith Gardner & Associates, Inc.

DATE: December 12, 2007

SUBJECT: Davidson County
Davidson County MSW Landfill - Phase 2 - Area 1
Construction Meeting Summary - December 5, 2007

Pieter K. Scheer
Digitally signed by Pieter K. Scheer
DN: cn = Pieter K. Scheer, c = US, o =
Richardson Smith Gardner and Associates, Inc.
Date: 2007.12.12 10:24:42 -0500

On December 5, 2007, a construction meeting was held at the Davidson County Landfill offices. The purpose of the meeting was to discuss construction progress and future stages of construction. Also part of this meeting included the required Soil Liner CQA meeting. The following is a summary of major topics discussed during the meeting:

Attendees:

Steven Sink, Davidson County
Karry Blaylock, Davidson County
Larry Kirkland, T&K Construction
Tommy Newman, T&K Construction
Alex Greene, Engineering Tectonics
Pieter Scheer, RSG
Byron Hackney, RSG

Current Progress:

T&K is continuing with earthwork activities and has completed the installation of culverts. The Area 1 excavation is getting more difficult with depth as the material is getting rockier. T&K currently has the north end and other portions of Area 1 near grade. T&K estimates that, except for soil liner material left in place, there is approximately 70K CY of excavation remaining. T&K also estimates that there is only about 5K CY of structural fill left to place.

Planned Construction Activities:

T&K plans to continue working on earthwork. Also planned is the installation of baffles in Sediment Basin No. 4 and the temporary seeding of disturbed areas. T&K plans to start work on the soil liner test pad during the week of December 10th.

Looking ahead, T&K plans to work on the soil liner (weather dependent) starting with the test pad and plans to start the leachate force main installation in January. T&K also plans to burn the remaining piles of vegetative matter at a later date depending on the issuance of a burn permit.

Other Items

T&K noted that the power to the construction trailer is on.

Drainage Channel No. 2 was discussed. Based on field conditions and upon review of his design calculations, Mr. Scheer agreed that this channel could be redirected to tie into Drainage Channel No. 3. This will shorten the quantity of this channel, which is a unit price pay item.

The amount of rock in the final few feet of structural fill in the perimeter berms was discussed. Mr. Scheer noted that isolated larger rocks (1 to 2 feet in any dimension), while allowed elsewhere in the fill, should be generally kept out of the upper 5 feet or so of fill within the defined present and future utility corridor (outer 8 feet of perimeter berm - per Detail 1/R1). This will minimize the difficulty of the installation of planned and future leachate force mains and electrical conduit.

The perimeter road drainage channel within the County's work area was discussed. Mr. Scheer stated that although the lining of this portion of channel was covered under the estimated quantity of this unit price item, the earthwork for this portion of channel is the County's responsibility. However, the County may elect to build this channel later as it is not presently needed. Thus, this quantity of channel would just be deducted to determine the final quantity paid for under the contract.

Soil Liner CQA Meeting

Mr. Scheer went over a review of specification and CQA requirements for the soil liner based on the **attached** agenda and relevant tables from the project CQA Manual.

T&K plans to construct the test fill (pad) in the SW corner of the cell. Survey information will be provided for the subgrade.

Next Meeting:

The next meeting is scheduled for Wednesday December 19th at 10:00 a.m.

If you should have any questions, comments, or revisions concerning these minutes, please notify us as soon as possible.

cc: Distribution:

Charlie Brushwood, Davidson County
Steven Sink, Davidson County
Lonnie Burgess, T&K Construction
Larry Kirkland, T&K Construction
Jamie Jenkins, T&K Construction
Jeff Sample, T&K Construction
Alex Greene, Engineering Tectonics
Byron Hackney, RSG

SOIL LINER CQA MEETING

AGENDA

1. Review of Specification Requirements (Tech. Specification Section 02250)

Test Fill Construction:

- Tentative location/Timeframe
- Record survey of test fill subgrade (if in cell)
- Size: 20' x 50' Min.
- Depth: 3 - 6" compacted lifts
- Same materials and equipment to be used in main construction

Construction of Compacted Soil Liner (CSL):

- Confirmation of test fill must be complete before beginning
- Subgrade prep. and proof-roll
- Loose CSL placed in max. thickness of compaction feet (or penetration depth) (first lift placed thicker to avoid subgrade contamination - o.k.)
- Clod size $\leq 3/4$ inches (may require breakdown prior to compaction)
- Rock fragments: 1.5" below finished CSL surface; 0.5" in finished CSL surface
- Compaction Requirements: $\geq 95\%$ Std. Proctor; \geq optimum moisture content; $k \leq 1 \times 10^{-5}$ cm/sec; 18" min. finished thickness (0.15 foot overbuild allowed)
- Protection of CSL from rain and desiccation (i.e. smooth drum roll)
- Scarify surface prior to placement of subsequent lifts or prior to moisture addition if material is determined to be too dry
- Holes in CSL - patch with compacted CSL or sodium bentonite compacted and hydrated
- Surveying: Verify thickness and slope of CSL using survey grid (need grid from surveyor)

2. Review of CQA Requirements (CQA Manual Section 4.0)

Performance of Control Tests on CSL material (Testing Underway)

Approval of CSL subgrade (visual and review of survey information)

CQA Testing:

- CQA testing in accordance with CQA Manual
- Timeframe for turnaround of CQA tests (typ. 2 to 3 days for prelim. results)

TABLE 1: SOIL LINER MATERIAL REQUIREMENTS

PROPERTY	TEST METHOD	VALUE
Visual Classification	ASTM D 2488	Clean natural fine-grained soil free from organics, debris, or other detrimental material. Soil type as required to achieve the hydraulic conductivity criteria.
Clod Size	-----	Maximum = ¾ inch (or less if required to achieve hydraulic conductivity criteria)
Gradation	ASTM D 422	Max. = ½ inch (finished Soil Liner surface) Max. = 1½ inches (below finished Soil Liner surface)
Atterberg Limits	ASTM D 4318	As required based on soil type.
Bentonite Content (Amended Soils Only)	-----	> 2% by weight as required to meet the hydraulic conductivity criteria
Hydraulic Conductivity (Lab Remolded) (Compacted Soil Liner)	ASTM D 5084 ³	$\leq 1 \times 10^{-5}$ cm/s at a density of $\geq 95\%$ maximum standard dry density and a moisture content \geq optimum moisture content ⁴

TABLE 2: IN-PLACE SOIL LINER REQUIREMENTS

PROPERTY	TEST METHOD	VALUE
Density	ASTM D 6938 ¹	≥ 95% maximum standard dry density ⁴
Moisture Content	ASTM D 6938 ²	≥ optimum moisture content ⁴
Maximum Lift Thickness (Compacted): (Compacted Soil Liner)	----	6 inches
Hydraulic Conductivity (Shelby Tube): (Compacted Soil Liner)	ASTM D 5084 ³	≤ 1 x 10 ⁻⁵ cm/s
Completed Thickness: (Compacted Soil Liner)	Survey	18 inches minimum

Notes:

1. Optionally use ASTM D 1556, ASTM D 2167, or ASTM D 2937.
2. Optionally use ASTM D 2216, ASTM D 4643, or ASTM D 4959.
3. Maximum effective confining pressure and maximum hydraulic gradient as follows.
Backpressure as recommended by ASTM D 5084. Modifications of the maximum hydraulic gradient may be allowed by the Engineer depending on actual hydraulic conductivity values.

Material	Maximum Effective Confining Pressure (psi)	Maximum Hydraulic Gradient
Compacted Soil Liner ($k \leq 1 \times 10^{-5}$ cm/s)	10	15

4. Or as otherwise determined by remolded samples to achieve hydraulic conductivity criteria.

END OF SECTION

TABLE 4.1: CQA TESTING PROGRAM FOR SOIL LINER MATERIAL APPROVAL

PROPERTY	TEST METHOD	MINIMUM TEST FREQUENCY
CONTROL TESTS:		
Visual Classification	ASTM D 2488	Each Soil
Moisture Content	ASTM D 2216	2,000 CY per Each Soil
Grain Size Analysis	ASTM D 422	2,000 CY per Each Soil
Atterberg Limits	ASTM D 4318	2,000 CY per Each Soil
Moisture-Density Relationship	ASTM D 698	5,000 CY per Each Soil
Hydraulic Conductivity - Lab Remolded	ASTM D 5084 ³	10,000 CY per Each Soil

TABLE 4.2: CQA TESTING PROGRAM FOR SOIL LINER TEST FILL

PROPERTY	TEST METHOD	MINIMUM TEST FREQUENCY
CONTROL TESTS: (See Table 4.1)		
Moisture-Density Relationship	ASTM D 698 ⁴	1 per lift
Hydraulic Conductivity - Lab Remolded	ASTM D 5084 ^{3,4}	1 per lift
RECORD TESTS:		
Lift Thickness	-----	Each Lift
Atterberg Limits	ASTM D 4318	1 per lift
Grain Size Analysis	ASTM D 422	1 per lift
In-Place Density	ASTM D 2922 ¹	3 per lift
Moisture Content	ASTM D 6938 ²	3 per lift
Hydraulic Conductivity - Undisturbed (Shelby Tube)	ASTM D 6938 ³	1 per lift

TABLE 4.3: CQA TESTING PROGRAM FOR SOIL LINER

PROPERTY	TEST METHOD	MINIMUM TEST FREQUENCY
CONTROL TESTS: (See Table 4.1)		
RECORD TESTS:		
Lift Thickness	-----	Each Lift
In-Place Density	ASTM D 6938 ¹	10,000 ft ² per lift
Moisture Content	ASTM D 6938 ²	10,000 ft ² per lift
Hydraulic Conductivity - Undisturbed (Shelby Tube)	ASTM D 5084 ³	80,000 ft ² per lift

Notes:

1. Optionally use ASTM D 1556, ASTM D 2167, or ASTM D 2937. For every 10 nuclear density tests perform at least 1 density test by ASTM D 1556, ASTM D 2167, or ASTM D 2937 as a verification of the accuracy of the nuclear testing device.
2. Optionally use ASTM D 2216, ASTM D 4643, or ASTM D 4959. For every 10 nuclear moisture tests perform at least 1 moisture test by ASTM D 2216, ASTM D 4643, or ASTM D 4959 as a verification of the accuracy of the nuclear testing device.
3. Maximum effective confining pressure and hydraulic gradient as required by the project specifications. Backpressure as recommended by ASTM D 5084.
4. These tests performed on the test fill may count toward the minimum frequencies established in **Table 4.1**.



MEMORANDUM

TO: Distribution

FROM: Pieter K. Scheer, P.E.
Richardson Smith Gardner & Associates, Inc. **Pieter K. Scheer**

DATE: February 26, 2008

SUBJECT: Davidson County
Davidson County MSW Landfill - Phase 2 - Area 1
Construction Meeting Summary - February 11, 2008

Digitaly signed by Pieter K. Scheer
DN: CN = Pieter K. Scheer, C = US, O =
Richardson Smith Gardner and Associates, Inc.
Date: 2008.02.26 09:51:48 -0500

On February 11, 2008, a construction meeting was held at the Davidson County Landfill offices. The purpose of the meeting was mainly for the required geosynthetics CQA meeting. The following is a summary of major topics discussed during the meeting:

Attendees:

Larry Kirkland, T&K Construction
Sean Simonpietri, Landsaver Environmental
Alex Greene, ET
Pieter Scheer, RSG
Byron Hackney, RSG

Current Progress:

T&K is preparing the surface of the soil liner for the geosynthetics.

Planned Construction Activities:

Landsaver Environmental (Landsaver) will begin the geosynthetics installation in the day or so depending on the weather. T&K will begin placement of stone and pipe as the geosynthetics work is completed (including obtaining required survey data and results of required CQA tests).

Geosynthetics Status and CQA Meeting:

Mr. Scheer stated that all geosynthetics were currently approved and are on-site. Mr. Scheer reviewed specification and CQA requirements for the geosynthetic components based on the attached agenda.

Geosynthetics Items Discussed:

The use of Landsaver's ATV was discussed. Mr. Scheer stated that an ATV was allowable for use during the deployment of geosynthetics as long as it is operated with no sudden stops, starts, or turns.

Subgrade acceptance was discussed. Landsaver stated that their preference would be to install geosynthetics over areas that they considered acceptable without signing a formal certificate. Mr. Scheer agreed with this practice.

Landsaver's general panel placement strategy was discussed. Landsaver plans to start on the west side of Area 1 with short runs down the western side slope. Landsaver then plans to deploy from the south end making longer runs toward the north end. T&K plans to construct and survey the sump just ahead of

deployment in this area to allow continued drainage through the existing culvert adjacent to the sump location.

The coordination of paint colors used for marking information on the liner system was discussed. Landsaver plans to use white or yellow and RSG will use red or orange.

Next Meeting:

The next meeting will be scheduled depending on the weather and progress with the geosynthetics.

If you should have any questions, comments, or revisions concerning these minutes, please notify us as soon as possible.

Attachment

cc: Distribution:

Charlie Brushwood, Davidson County
Steven Sink, Davidson County
Lonnie Burgess, T&K Construction
Larry Kirkland, T&K Construction
Jamie Jenkins, T&K Construction
Jeff Sample, T&K Construction
Alex Greene, Engineering Tectonics
Byron Hackney, RSG

GEOSYNTHETICS CQA MEETING

AGENDA

1. Status of Approvals

Material	CQA Status
Subgrade/Soil Liner	<ul style="list-style-type: none">• Lift 1 and 2 permeability tests complete; Lift 3 - Initial 3 tests complete - last 5 tests underway• Compiling CQA data• Awaiting survey data
GCL (CETCO Bentomat SDN)	<ul style="list-style-type: none">• Passed material testing• Material on-site
60 mil Textured HDPE Geomembrane (Agru Microspike)	<ul style="list-style-type: none">• Passed material testing• Material on-site
Geotextiles (SKAPS GE112 & GE160)	<ul style="list-style-type: none">• Passed material testing• Material on-site

2. Review of Specification Requirements

GCL (Tech. Specification Section 02776):

- Installation in accordance with specs. and approved procedures.
- Install GCL with light gray (6 oz./sy) side up (against 60 mil HDPE geomembrane) (Black 3 oz/sy side down).
- 6" min. overlap on roll edges and 12" min. along roll ends with 0.25 lbs/LF bentonite (No bentonite is required on roll edges with "Supergroove" system.).
- No horizontal (end) seams on 3H:1V slopes.
- Shingle all GCL seams (upper panel over lower panel).
- Cover GCL with geomembrane in timely manner (especially when rain is forecast).

Geomembrane (Tech. Specification Section 02775 (HDPE-GM)):

- Installation in accordance with specs. and approved procedures.
- Install Geomembrane with longer nubs down against GCL.

- Landsaver to provide the following:
 - Trial seam log
 - Panel/Seam log
 - Non-destructive testing (vacuum/air pressure tests) log
 - Destructive sampling log
 - Repairs log

Provide copies of the above forms to RSG at least weekly for review.

- Record Information:

Per Paragraphs C.2.c. and D.8 of Section 02778, the following information is required for each geomembrane:

CQC Documentation: Includes trial seam logs, panel placement logs, panel seaming logs, non-destructive seam testing report forms, field destructive seam testing report forms, and repair logs.

As-Built Drawing:

- (1) Location and numbering of all panels/seams;
- (2) Location of all repairs/patches;
- (3) Location of all destructive test locations; and
- (4) Location of all pipe penetrations and other appurtenances (if applicable).

Survey information needs to be obtained/reviewed prior to placement of overlying materials.

Geotextiles (Tech. Specification Section 02240):

- Installation in accordance with specs. and approved installation procedures
- Plan for seaming geotextiles?

3. Review of CQA Requirements (CQA Manual Sections 5.0, 6.0, 7.0, and 8.0)

Conformance Testing of Geosynthetic Materials:

- See Status of Approvals above.

Geomembrane (HDPE):

- Marking on liner for panel identification, sampling, repairs, etc. (Landsaver/RSG/Surveyor) (pen colors?)
- Field tensiometer provided by Landsaver - should have recent calibration data
- Trial seam procedures in accordance with Section 5.4.5.1 (Landsaver to document) (Note: minimum of four coupons - 2 peel & 2 shear)
- Non-Destructive Testing: Vacuum or air pressure testing to be done continuously by Landsaver on all seams in accordance with Section 5.4.6.1

- Destructive Testing: Samples to be cut and tested at minimum one per 500 LF of weld in accordance with Section 5.4.6.2. (Landsaver to document) (Note: minimum of ten coupons - 5 peel & 5 shear). Minimum one sample per day sampled and sent to CQA laboratory (Typical 1 day turnaround on test results).
- Repairs and Verification: In accordance with Section 5.4.7

4. Review of Project Drawings

- Landsaver panel placement strategy?

5. Other Items

- Collection pipe cleaning and camera inspection

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